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94-ERB-052

Mr. Dave C. Nylander
Nuclear and Mixed Waste
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Department of Ecology
7601 W. Clearwater, Suite 102
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Mr. Douglas R. Sherwood
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352

9413149.0081

Dear Messrs. Nylander and Sherwood:

SUBMITTAL OF THE 100-D PONDS CLOSURE PLAN, REVISION 0, NOTICE OF DEFICIENCY (NOD) RESPONSE TABLE (D-1-1)

Please find the enclosed NOD Response Table for the 100-D Ponds Closure Plan, Revision 0. This NOD Response Table addresses the State of Washington Department of Ecology comments received from the NOD transmittal on September 22, 1993.

Should you have any questions or require any additional information, please contact Mr. G. I. Goldberg, DOE Richland Operations Office, on 376-9552, or Mr. F. A. Ruck, Westinghouse Hanford Company, on 376-9876.

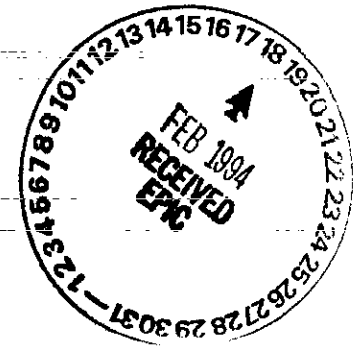
Sincerely,

James D. Bauer

J. D. Bauer, Program Manager
Office of Environmental Assurance,
Permits, and Policy
DOE Richland Operations Office

END:GIG

R. E. Lerch, Deputy Director
Restoration and Remediation
Westinghouse Hanford Company




Enclosure

cc: D. L. Duncan, EPA w/o encl.
A. D. Huckaby, Ecology w/o encl.
M. T. Janaskie, EM-442 w/o encl.
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EDMC H6-08 w/encl.

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1. Part A Forms Section. Please provide a copy of Revision 1. A copy of Revision 2 has been located and is not needed.

   **WHC Response:** A copy of this superseded document will be supplied.

2. 1-1/34-35. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the description that the unit is being permitted under WAC 173-216.

   **WHC Response:** A decision by RL to implement the 183-D Water Treatment Facility deactivation plan before June 1995 was documented at the October 12, 1993, 100-D Ponds Unit Manager Meeting. Subsequent to that Unit Manager's Meeting, a decision to cease discharges to the 100-D Ponds by June, 1994, has been formalized. Consequently, the unit is no longer being permitted under WAC 173-216 and all reference to continued use of the unit for liquid waste disposal after RCRA closure will be deleted from closure plan text.

3. 1-1/48-52 and 1-2/1-14. It is stated that "the proposed closure strategy is clean closure to be based on the analytical results of pond characterization sampling that is already complete." Closure for this unit will be conducted in accordance with WAC 173-303. Specifically, WAC 173-303-610(ii) requires that the unit be closed in such a way that a dangerous waste and dangerous waste constituents be controlled, minimized or eliminated to prevent escape of contaminants, leachate, contaminated run-off, or degradation products to the ground, surface water, groundwater or the atmosphere. As this is a land-based RCRA unit, designed for disposal with an estimated inventory disposed at the unit, "analytical results of pond characterization sampling" will be insufficient to achieve closure in accordance with WAC 173-303. Delete the above referenced proposal. In addition, it should be noted that WAC 173-303-610(2)(iii) and 173-303-650(6) require removal or decontamination. During closure of the unit, it must be shown that all applicable medias and equipment/accessories associated with the unit have been removed or decontaminated to the standards of WAC 173-303-610(2).

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**WHC Response:** *Resource, Conservation and Recovery Act of 1976* (RCRA) closure planning at the Hanford Site has taken the tack that characterization sampling, if sufficiently comprehensive and adequately performed and analyzed, can also serve as verification sampling to prove that the unit is free of RCRA contamination above regulatory cleanup levels. The cleanup levels anticipated to be appropriate for unit closure and readily achievable without unit remediation are residential, health-based levels (WAC 173-303-610 [proposed]). Consequently, it is anticipated that comprehensive characterization sampling that identifies no contamination above specified regulatory cleanup levels will qualify the site for clean closure. This sampling system was established to avoid a second round of sampling where one round, if done properly, would suffice. It will also address such units as the 100-D Ponds, where the contaminants managed at the site (acids/bases as indicated in the Part A permit application) are not realistically expected to persist.

However, it is recognized that Phase I sampling may not have fully characterized the unit. Therefore, all appropriate portions of the closure plan will be revised to include information regarding a Phase II of 100-D Ponds sampling to complete TSD unit characterization. Phase II sampling will undergo a formal data quality objectives process (DQO) process to resolve such issues as sample location, list of analytes and action levels. Phase II sampling is not, however, expected to entail analysis for the full Appendix IX suite of analytes.

Additional sampling would be performed only if Phase I and Phase II sampling results indicated the necessity of 100-D Ponds media decontamination or removal in order to meet specified health-based cleanup levels. The additional sampling would likely be verification sampling after such decontamination/removal. Wherever possible, such sampling or decontamination/removal will be performed in conjunction with the schedule and methods established for the 100-DR-1 operable unit.

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4. 1-2/14-17. It is inappropriate to defer associated cleanup/closure activities related to this RCRA unit to remediation being conducted by another unit and another program. As RCRA/CERCLA integration guidance is unavailable at this time, addressing the proposed closure activities associated with this RCRA unit will be conducted in accordance with WAC 173-303, where applicable. Delete the statement.

**WHC Response:** The basis and rational for integrating characterization sampling and remediation activities for RCRA treatment, storage, and/or disposal (TSD) units and past-practice units that share proximity, processes, or waste streams is provided within the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Section 5.5). Such an arrangement is particularly logical at units such as the 100-D Ponds, where the remaining contamination is expected to be derived only from past-practice activities. The Tri-Party Agreement recognizes this condition as being applicable to the 100-D Ponds and so specifically assigns this TSD unit (Tri-Party Agreement Disposal Unit, D-1-1) to the 100-DR-1 Operable Unit for purposes of remediation.

Further, the regulators and the regulations fully recognize and encourage unit integration in order to avoid physically inconsistent actions by the RCRA and the past-practice units. In Paragraph 79 of the Tri-Party Agreement the regulators have voiced the desire to avoid such physically inconsistent actions by the two units. The only way to ensure this is to have the two units working together wherever possible, i.e., working to the same schedule and cleaning up to the same standards. This regulator desire is directly reflected at Hanford by the establishment within the TPA of coinciding submittal dates for RCRA and past-practice planning documents. This desire is also directly reflected by the establishment of analogous health-based cleanup levels for the RCRA and the past-practice units. To this end, the Joint Committee on Risk Assessment is developing a sitewide approach joining Hanford Site Baseline Risk Assessment Methodology (HSBRAM) and Model Toxics Control Act (MTCA) requirements by coordinating the use of HSBRAM and MTCA health-based cleanup levels. Further, MTCA, *Washington Administrative Code* (WAC) 173-340-120 (8) (a), encourages agreements, such as the Tri-Party Agreement, that can be tailored to individual sites and will ensure more efficient remedial actions that protect human

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health and the environment. Also, for purposes of ensuring more efficient remedial actions while still meeting RCRA standards, RCRA is an applicable or relevant and appropriate requirement (ARAR) for past practice units. Consequently, operable unit activities in support of TSD unit closure must still satisfy RCRA technical requirements as implemented by WAC 173-303-610 and WAC 173-303-650.

When the initial Tri-Party Agreement was signed, it was the intent of the parties that closure plans for those TSD facilities assigned to operable units would be submitted in conjunction with the proposed action for the operable unit. Section 3.2 of the Tri-Party Agreement action plan states "Some TSD groups/units are included within operable units (see 3.3 below) and will be addressed concurrently with past-practice activities as defined in section 5.5." Section 3.3 enhances this statement and continues, "The information resulting from the investigation will be used to supplement the preparation of the Part B applications and/or closure plans for such TSD groups/units." In comparing the schedules in the initial agreement, the closure plan dates for TSDs assigned to operable units coincided with the dates for submittal of CERCLA proposed plans or RCRA corrective measure study reports. Subsequent to the initial Tri-Party Agreement, the date for the 300 Area process trenches closure plan was changed when the definitive schedule for the 300-FF-1 operable unit was established to keep the efforts in line with each other. The decision not to extend the date for the 100-D pond closure plan consistent with the delay in the 100-DR-1 operable unit was based on section 6.3 of the Tri-Party Agreement Action Plan, second bullet:

"For a land disposal unit being closed in conjunction with an operable unit, initial investigation may show that the unit no longer contains hazardous waste or constituents. Therefore, the unit may be "clean closed" with no physical closure action. Any remaining CERCLA only materials would be addressed as part of the past practice process as designated for that operable unit."

If the 100-D pond cannot be clean-closed as stated above, any further action on this closure plan should cease until such action is conducted in conjunction with the operable unit investigation and documentation.

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5. 1-2/17-19. Define "remediation" as used in the context of closure. If compliance monitoring requirements are imposed related to ground water contamination, it is inappropriate to defer such activities. Similarly, if removal of contaminated wastes, residues, leachates, etc. is necessary to achieve closure, it is inappropriate to defer such activities. The Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) provides for a simultaneous investigation of ground water contamination for RCRA TSD units and CERCLA operable units. The reviewer interprets this provision (Volume 1, page 3-3) to address ground water contamination and ultimately corrective action(s) associated with the units. It is inappropriate to defer decontamination verification activities related to the RCRA TSD to another program. Delete or modify the statement.

**WHC Response:** Compliance monitoring imposed because of groundwater contamination originating from the TSD unit would not be deferred to any other program. However, the text, as presented, accurately reflects the division of physical remediation responsibilities at the Hanford Site. The TSD unit will not perform groundwater remediation at Hanford. The Tri-Party Agreement addresses groundwater monitoring and contamination at the Hanford Site as an aggregate area concern and on an aggregate area schedule. Volume 1, Page 3-3 of the Tri-Party Agreement specifically establishes groundwater operable units to address groundwater contamination where multiple contamination sources are indicated, such as for the groundwater contaminant plume under the 100-D Area. The groundwater operable units are considered past practice units under Section 3.3 of the Tri-Party Agreement. Consequently, the Tri-Party Agreement recognizes that groundwater remediation will be a function of the past practice unit.

It should be noted here that the intent of the closure plan is not to solicit certification of TSD unit clean closure before groundwater remediation, where such remediation is required because of TSD unit contaminants. However, under these conditions and if sampling indicates that TSD unit soils are clean to health-based standards that do not require postclosure monitoring, the unit should be allowed to clean close. Where groundwater contamination is not from the TSD unit, such as is the case for the 100-D Ponds, past-practice unit groundwater monitoring would

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continue until groundwater remediation is complete and RCRA groundwater monitoring could cease. It should be noted that clean closure certification of a TSD unit where groundwater is contaminated, but not by TSD unit operations, can be performed by Ecology and as is being done for the B-Ponds TSD unit.

6. 2-1/47-50. Please confirm that what is stated in the parentheses is consistent with the latest version of the Revised Draft Final Permit For the Treatment, Storage and Disposal of Dangerous Waste. In particular, confirm that the definition is consistent with the legal and physical description as set forth in Attachment 2 of the draft permit. It is recommended that the above referenced definition be cited.

**WHC Response:** This description is consistent with the Draft Hanford Facility Permit and with the existing Hanford Facility Part A Permit Application (closure plan reference DOE-RL 1988a).

7. 2-2/22-27. As the unit has been utilized as a RCRA hazardous waste treatment and disposal unit since 1977, the pond influent piping and any dangerous waste constituents associated with the treated and disposed wastes contained within the influent piping or the surface impoundments (including unexcavated ash serving as the impoundment lining, if applicable) is subject to RCRA TSD requirements and is within the scope of this closure plan. Delete the paragraph.

**WHC Response:** It is appropriate to attempt to establish the boundaries of the TSD unit in a closure plan and that is the intent of this paragraph. The closure plan attempts to clarify that the following media predate the use of the site as a RCRA TSD: the concrete outfall structure, piping to the outfall structure branching off of the main 100-D Area Process Sewer System, and the ash piles that surround the site. At Hanford, such past practice structures/components can be addressed by the network of past-practice operable units that have been established by the Tri-Party Agreement across the site to address area-wide conditions and structures such as the 100-D Area sewer system. As such, these media are outside the scope of this closure plan.

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WAC 173-303-610 (2)(b)(i) limits the responsibility for waste remediation/removal to the waste managed at the site. It is the contention of the closure plan that any dangerous waste constituents other than the corrosive characteristic dangerous waste for which the unit was permitted, are past-practice constituents. As such these constituents are outside the scope of this closure plan. The closure plan identifies an historical potential for minute amounts of mercury to have been carried from process sewer piping to the ponds after 1977 (the operational timeframe of the site as a TSD unit). However, that mercury in the process sewer system would have been deposited prior to 1977 and therefore is clearly a past-practice constituent in the process sewer system.

The text specifically does not delete the associated transfer piping and the overflow standpipe installed as a portion of the TSD unit. This portion of the text is considered essentially accurate as presented.

8. 2-2/37-42. A bottom sealing problem is described to have prompted the division of the pond by the construction of a dike. Is there any indication that influent may have exceeded the capacity of the ponds? Similarly, has pond sediment/sludge been dredged at any time? In addition, it is requested that all existing aerial photographs which include the 100-D ponds unit be made available to the Ecology Unit Manager for review.

**WHC Response:** There is no indication or report of the effluent having exceeded the banks of either the single pond or the two ponds after installation of the dike. There is no report of the ponds having been dredged for sludge removal during their operation as a TSD unit. However, the method of dike construction is not known, consequently, it is possible that the north end of the single pond (now the north pond), was dredged to form the dike. This could explain why the north pond is deeper. Aerial photos of the area will be made available to the Ecology Unit Manager.

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9. 2-2/37-42. During the construction of a dike and sloping walls, where did the material used for construction come from? From the description of the north pond on page 2-3, lines 5-8, it appears that the north pond is approximately six feet deeper than the south pond.

**WHC Response:** Regarding the source of dike construction material, please see the response to NOD Comment 8. Regarding the different depths of the two ponds, the depth of the north pond was derived through visual inspection. Because it had standing water in it, the south pond's depth was derived by measuring from the top of the pond banks to the water surface, then from the water surface to pond hardpack, which was assumed to be the bottom of the pond. The difference in depth between the two ponds was corroborated using the 100 Area Topographical Map, H-13-000127. This map will be added to the references section of the closure plan.

10. 2-4/9-11. Ash is described as being visible in the soil of the percolation pond. How has this blackened material within the percolation pond been differentiated from waste disposed or treated within the unit?

**WHC Response:** The sandfilter backwash effluent from the 183-D Water Treatment Facility (WTF), which represents virtually all the waste disposed of by the unit, contains raw water (Columbia River) solids and aluminum precipitate (alum flocculent) previously trapped within the filters. The alum flocculent is white when added to the filtration process as aluminum sulfate, but becomes brown stained by raw water solids during the filtration process. The coal ash is black. However, the closure plan will be revised to differentiate between site soils, alum precipitate, and coal ash by better describing the physical characteristics of each.

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11. 2-4/24-29. As indicated by Figure 2-3, and as noted during a July 27, 1993, site visit, the ponds are located north of the perimeter fence and are not secured by a 24-hour surveillance system or an artificial or natural barrier which completely surrounds the unit as required by WAC 173-303-310(2). Milestone M-21-00 of the Tri-Party Agreement required the submittal of an interim status compliance assessment for the 100-D Ponds by March 31, 1989. The assessment, entitled "Final Draft Resource Conservation and Recovery Act Interim Status Assessment of Thirteen Facilities," (WHC-EP-0257) identifies the required action of erecting a barrier around the facility and the posting of signs visible from all approaches and a scheduled compliance date of July 31, 1989. It is the reviewer's understanding that an agreement was made to allow for wire roping erected around the unit and posting to suffice for the above referenced requirement. An attempt to find the documentation of such an agreement in the Administrative Record was unsuccessful. If documentation exists, please provide copies of the documentation. It is also the reviewer's understanding that additional administrative controls (posting) are in place along the river. If this is correct, please include a description of any additional administrative controls in place to prevent unauthorized entry to the unit. Lastly, during a July 27, 1993, site visit, two of the five placards (stating "RCRA Waste Site -- Do Not Disturb") were noted on the ground. Please reattach the placards to the wire roping.

**WHC Response:** Section 2.4 of the closure plan, as written, describes how current TSD unit postings and Hanford site security meet WAC 173-303-310 requirements for 24-hour surveillance and artificial or natural barriers. It has been agreed in the past that the Columbia River and the remoteness of the TSD unit within the restricted-access Hanford Site, provide a natural barrier that meets the intent of the WAC regarding the requirement for an artificial or natural barrier. Further, additional administrative controls exist in the form of "No Trespassing" signs posted along the banks of the Columbia River that border the Hanford Site.

It was noted that the verbiage on signs posted at the unit until recently did not reflect the intent of the WAC. Consequently, the signs have been replaced with signs that carry the legend, "Danger - Unauthorized Personnel Keep Out".

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12. 2-4/31-35. Please confirm if this is currently the security maintained at the 100 D and DR Areas. If not, modify the description accordingly.

**WHC Response:** This paragraph still accurately reflects the security and access to the operational areas of the Hanford Site, which are all located north and east of the Wye and Yakima barricades, respectively.

13. Diagram(s)/Plan(s). The closure plan does not include a detailed diagram or plan of the pipes that carry/carried liquid effluent from individual facilities/buildings to the 100-D Ponds. A detailed description of the steps needed to remove or decontaminate all dangerous waste residues and contaminated containment system components, equipment, structures, and soils during closure is required by WAC 173-303-610(3)(a)(v). Although Figure 2-2 establishes the connection of buildings 190-DA, 189-D, 185-D, 183-D, 182-D, 190-D and 1724-DA to the unit, it does not include the detail required to evaluate how these pipes will be closed in relation to the closure of the 100-D Ponds. Submit the diagrams or plans with the next revision of the closure plan.

**WHC Response:** Figure 2-1 is a composite drawing reflecting most of the information available on the piping layout. All available diagrams for piping that transported the corrosives or previously neutralized corrosives and for piping from the 183-D WTF, will be made available to the Ecology Unit Manager. Further, the closure plan will be clarified by revising Figure 2-1 or by adding other figures that more clearly indicate the chronology of process sewer flows to the site of the 100-D Ponds TSD unit.

14. Chapter 2.0. A detailed description of the ash disposal basin which provides a description of elevational contouring has not been included in the closure plan. In addition, Chapter 2.0 does not include descriptions of information obtained from the geologic logs available for wells installed within the area, descriptions of materials (soil, sand, gravel, ash, etc.) visually noted at the unit, description of conditions encountered during sampling events (sediments, hardpack, etc.).

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**WHC Response:** As much detail as is known regarding the 188-D Ash Disposal Basin (ADB) has been included in the plan. Figures F5-15 and F5-18 (Chapter 5.0, Groundwater) depict the thickness of backfill at the 100-D Area and a provide a section view of the depth of backfill at the 100-D Ponds. Backfill is predominantly flyash from the 188-D ADB and was used throughout the site (5.3.5.1.1). All the information for Figure 5F-18 was taken from drilling logs of Groundwater Monitoring Wells D8-4, D8-6, and D5-13. A current elevational contouring of the unit will be provided as indicated in response to NOD Comment 9 regarding the addition of unit topographical information to the closure plan.

An extrapolation of well-log information depicted in Figure F5-18 presents the likelihood that the settling pond does not penetrate the soil/ash barrier and that some or all of the percolation may penetrate the soil/ash barrier. However, such extrapolation is conjecture.

Regarding a more comprehensive description of materials (soil, sand, gravel, ash, etc.) please see the response to NOD Comment 10. A more complete description of conditions encountered during sampling (sediments, hardpack, etc.) will be added as requested.

15. Figure 2-3. During a visit to the unit on July 26, 1993, it was noted that a mound of material exists within the northern pond/basin on the western end of the basin. Without identifying elevational contours, it cannot be determined if the contours of Figure 2-3 are drawn correctly, but it appears that the mound is not accurately reflected on the figure. Also, as the elevations of the ground surface of ground water monitoring wells have been surveyed as well as the ground surface on the top of the hill located along the eastern edge of the unit, additional information of the surrounding elevations is requested to better understand the ash and gravel contact(s) associated with the unit.

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**WHC Response:** Figure 2-3 is intended to provide a general overhead view of the unit, its components and the access road. It was not intended to provide topographical details. The figure will be simplified to eliminate unexplained contour lines. Regarding including additional information about the surrounding elevations to better understand the ash and gravel contact(s), please see response to NOD Comment 14.

16. 3-2/40-42. It is inappropriate to make a statement such as this without providing a detailed description of how the determination would be made between contamination resulting from past practice activities and TSD operation activities. Due to the design of the 100-D Area process sewer system, all materials directed to the 100-D ponds (upon initiation of the surface impoundment as a RCRA TSD unit) are subject to be decontaminated or removed in accordance with WAC 173-303-610 standards. Due to the lack of documentation of materials directed to the sewer system, 40 CFR 264 Appendix IX constituents will be required to be evaluated for closure. Therefore, unless it can be proven that 40 CFR 264 Appendix IX constituents were not directed to the unit, delete the sentence and modify the closure plan accordingly to reflect that 40 CFR 264 Appendix IX constituents will be evaluated during closure of the RCRA unit for decontamination or removal. In addition, it should be noted that even though pond influent piping and coal ash may have predated the unit as a RCRA TSD, the unit (including ancillary equipment and underlying materials constituting surface impoundment sides or bases) will be closed in accordance with WAC 173-303-610 due to the unit's usages as a RCRA TSD unit.

**WHC Response:** The referenced sentence will be deleted as superfluous.

Regarding the appropriateness of full Appendix IX sampling at the 100-D Ponds, the Westinghouse Hanford Company/U.S. Department of Energy (WHC/RL), Richland Operations Office (WHC/DOE-RL) position is that by using available site history and process knowledge, the plan has reasonably characterized as quite low the potential for significant contaminated discharges from the 189D MDL buildings to the process sewer system and subsequently to the 100-D Ponds. A preliminary review of Phase I sampling analytical results seems to corroborate the contention that analysis for

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the full Appendix IX suite of analytes is not justified. As indicated in the response to NOD Comment 3, the DQO process for Phase II sampling will address sampling concerns such as the list of analytes.

Regarding coal ash and influent piping as TSD unit media: underlying materials constituting the surfaces of the impoundment that are contaminated with waste managed by the TSD, are the responsibility of the RCRA unit, i.e., the closure plan will document their remediation/removal. Ancillary equipment, particularly 100-D Area Process Sewer System piping, is past practice for the reasons stated in the responses to NOD Comments 3, 4, and 7 and is, therefore, as intended by the Tri-Party Agreement, outside the scope of this closure plan. However, whether the contamination originates from past-practice or RCRA TSD-unit operations, the Tri-Party Agreement ensures eventual site cleanup to levels that protect human health and the environment - even where it coordinates RCRA remediation with operable unit schedules, methods, and cleanup levels.

17. 3-2/47. Delete the wording which indicates that mercury as a potential contaminant in the unit is a "past practice constituent." For the reasoning described above under comment 3-2/40-42, mercury and other 40 CFR 264 Appendix IX constituents will be considered RCRA TSD constituents for purposes of closure.

**WHC Response:** Through historical site information and process knowledge, the closure plan has presented the contention that the potential for mercury deposition to the 100D Area Process Sewer System ceased in 1974. This date is three years before the sewer was diverted to the ponds and six years before the effective date of RCRA regulations. Therefore, mercury in the 100D Area Process Sewer System has reasonably been considered a past-practice constituent. If the plan is not clear on this point it will be revised.

Mercury in the 100-D Ponds is also reasonably considered a past practice constituent. This is because the potential for mercury to have been carried from the process sewer system to the site in heavy coal ash slurries before 1968 (pre-RCRA) is far greater than the potential for mercury to have been later washed

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from the system under low-flow conditions from the 183-D WTF, especially as the sewer system had been purging itself for three years. However, in a worst-case condition, the plan recognizes a slight potential for mercury deposition at the immediate outfall point of unit influent piping. This deposition would likely have occurred during the first years of the ponds operation, prior to their regulation as a RCRA TSD unit. This possibility was addressed by sampling for mercury at this location.

18. 4-1/41. The sentence should read " . . . the 189D MDL occasionally discharged corrosive or previously neutralized corrosive effluents . . . "

**WHC Response:** Text will be revised as requested.

19. 4-3/1-7. A detailed description of the ash disposal basin and the associated pond excavation has not been included in the closure plan. The brief description included on Page 4-3 states that "[t]he quantity of coal ash actually remaining at the unit after excavation of the ash basin is indeterminate. This is because pre-excavation ash depths are unknown and therefore the 30 feet deep excavation may or may not have penetrated the ash basin's ash/soil barrier." A detailed description of the unit and surrounding coal ash contacts is requested. Figures 5-15 and 5-18 define the 'approximate thickness of backfill in the 100-D Area." It is noted that no differentiation between backfill and fly ash is made. It is also noted that the 100-D Pond ground water monitoring well logs of Appendix 5A do not clearly distinguish "black sand," "gravelly sand" and "fly ash" to provide a differentiation between the backfill and fly ash. A detailed description of the unit and surrounding coal ash/backfill/soil/gravel/etc. contacts based upon visual inspection and any useable information such as that obtained from the geologic logs available for wells installed within the area is requested. It should be noted that during a July 27, 1993 visit to the unit, the ash/gravel contacts noted across and through the ponds appeared to occur at the top of the ponds and to be dipping in a westerly direction. From visual inspection, it appears that the basins were excavated through the ash into underlying soil/gravel.

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**WHC Response:** For a description of the unit and surrounding ash contacts and to differentiate between flyash and backfill, please see the response to NOD Comment 14. "Black sand" and "gravelly sand", as identified in well logs, will be defined in the closure plan text.

20. 4-3/22-24. Very little has been corroborated by the referenced previous pond water sampling. Considering percolation rates for the pond water, would any mercury be expected to be detected? It can be argued that the detection of mercury, as indicated by Table 4-4a, corroborates just the opposite. It is inappropriate to make this statement at this time without having sampled applicable medias where mercury would most likely be expected to be found. Delete the sentence.

**WHC Response:** The sentence will be deleted as requested.

21. Table 4-4a. The purpose of the table is questioned. Without knowing what the samples were subjected to during the EP toxicity analysis, the results cannot be interpreted to have significant meaning. In addition, for regulatory purposes, the sampling event represents the sampling of pond water that existed at one given time. There is not certification of the pond water being representative of the pond water typically directed to the unit. In addition, Chapter 2 establishes that inventory records for the unit and the seven buildings is limited or lacking altogether. Therefore, the results of Table 4-4a may represent the pond water at the time of sample collection, but conclusions cannot be drawn from the results to represent anything more.

**WHC Response:** Table 4-4a will be replaced with Phase I pond water sample results. Since this site began operations in 1977, the only water "typically directed to the unit" was the nondangerous effluent from the 183-D WTF. The only other water of significance directed to the process sewers, and therefore to the unit, were the small and infrequent effluent discharges (Table 4-2) from the demineralizers which, because of their potential for corrosivity, qualified the unit as a RCRA TSD.

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22. 4-3/30-37. Delete the three sentences. The unit description of Chapter 2 establishes that the unit was connected to at least seven different buildings via piping. The unit description of Chapter 2 also establishes that inventory records for the unit and the seven buildings is limited or lacking altogether. The description of Chapter 3 also establishes that mercury contamination remaining in the piping could have been directed to the unit at any time.

**WHC Response:** The information in this paragraph was presented to inform the reader that the presence of mercury as a RCRA constituent was weighed during the permitting process and that the permitting process did not identify mercury as a RCRA constituent. However, the chronology of mercury deposition to the process sewer system and subsequently to the 188-D Ash Disposal Basin as the future site of the 100-D Ponds is sufficiently detailed at Page 4-3, Lines 9-20, that the paragraph beginning at Line 30 and ending at Line 39 can be deleted as requested.

23. 4-3/37-39. Delete the sentence. There is no need to explain why mercury was not added to the Part A Permit Application.

**WHC Response:** Please see the response to NOD Comment 22.

24. 4-4/15-18. The second paragraph of the Tri-Party Agreement, Section 6.3 states, "[t]he TSD units containing mixed waste will normally be closed with consideration of all hazardous substances, which includes radioactive constituents." Consequently, the focus of this closure is not limited to exclusively addressing the dangerous waste constituents. Because the dangerous and radioactive components of the wastes directed to this unit cannot be separated, it is not feasible or prudent to address the constituents separately. Delete the paragraph.

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**WHC Response:** The paragraph in the Tri-Party Agreement referenced by the reviewer goes on to state, "Hazardous substances not addressed as part of the TSD closure may be addressed under CERCLA past-practice (CPP) authority in accordance with the process defined in Section 7.0. It should be noted here that Section 7.0, "Past Practice Processes," also includes RCRA past-practice units such as the 100-DR-1 operable unit. The second bullet under Section 6.3 of the Tri-Party Agreement action plan provides for clean-closing a land disposal unit for hazardous wastes or constituents only, and deferring CERCLA-only wastes to the past-practice activity. Further, the only place in the Tri-Party Agreement that specifically indicates that the radiological component will be addressed in a TSD unit closure action is Volume 1, Section 6.3.2, "Closure as a Land Disposal Unit." Consequently, the paragraph of the closure plan text referenced by the reviewer is accurate as written and does not require revision to meet regulatory intent.

25. 4-4/39-42. Delete or rewrite the sentence. The unit description of Chapter 2 establishes that the unit was connected to at least seven different buildings via piping. The unit description of Chapter 2 also establishes that inventory records for the unit and the seven buildings is limited or lacking altogether. The description of Chapter 3 also establishes that dangerous wastes or dangerous waste constituents remaining in the piping could have been directed to the unit at any time.

**WHC Response:** The referenced sentence will be revised to read, "The only dangerous wastes documented to have been discharged to the ponds are the acid and caustic demineralizer regenerative solutions designated within the Part A Permit as D002 corrosive characteristic dangerous waste."

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26. 4-5/1-4. Delete the paragraph. The unit description of Chapter 2 establishes that the unit was connected to at least seven different buildings via piping. The unit description of Chapter 2 also establishes that inventory records for the unit and the seven buildings is limited or lacking altogether. The description of Chapter 3 also establishes that dangerous wastes or dangerous waste constituents remaining in the piping could have been directed to the unit at any time.

**WHC Response:** The referenced paragraph will be deleted as being an unnecessary restatement of previous closure plan portions.

27. Chapter 5.0 and 5-1/12-15. Although ground water monitoring at the 100-D Ponds is stated to be conducted in accordance with the interim status ground water requirements of 40 CFR 265, Subpart F, 40 CFR 270.1(c) requires an equivalency determination. Also, Section 6.3.1 of the Tri-Party Agreement requires the documentation that ground water has not been adversely impacted by the unit as described in WAC 173-303-645. Therefore, the ground water monitoring program described in Chapter 5.0 should be upgraded to be conducted in accordance with the final facility status ground water monitoring requirements of WAC 173-303-645.

**WHC Response:** Regarding an equivalency determination, it is the WHC/RL contention that the submittal of this closure plan to regulators (EPA and Ecology) fully complies with the intent of 40 *Code of Federal Regulations* (CFR) 270.1 (c) (5) (ii) (A) for units operating under interim status.

During a postclosure period, the groundwater monitoring program would likely be essentially a continuation of the current monitoring program revised to include unit-specific indicator parameters, but would also be as stipulated in the Postclosure Permit Application. The unit operates under Interim Status and although closing under WAC 173-303-610 standards as required by the TPA, groundwater will continue to be addressed under Interim Status.

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This unit is not operating under a Final Status Permit that would specify dangerous waste parameters and limits. The interim status groundwater monitoring program is appropriate and sufficient for purposes of RCRA groundwater closure verification. The interim-status groundwater monitoring system for the 100-D Ponds meets all the technical requirements of a final status groundwater monitoring program due to its being supplemented to include parameters of concern from TSD-unit and operable-unit operations. This supplemented program is based on RCRA Past-Practice Operable Unit RCRA Facilities Investigation/Corrective Measures Study (RFI/CMS) sampling results and earlier groundwater monitoring results. It can be further supplemented using TSD-unit sample results and TSD-unit process knowledge and historical information identifying those constituents with a potential to have been managed at the site.

The EPA's Office of Solid Waste and Emergency Response (OSWER Policy Directive # 9476.00-18 and OSWER Memorandum # 9476.1989(08)) recognizes that unit closure using the interim status program data is feasible, permissible and desirable. This intent is made clear through guidance for using interim-status, groundwater monitoring program information for final unit closure where such a program is supplemented to include monitoring for dangerous waste constituents that could be reasonably expected to have existed at the site. The closure plan will be revised to include notification of the Waste Information Data System (WIDS) database to ensure operable unit (OU) groundwater monitoring/cleanup is notified of TSD unit-specific contaminants as potential groundwater parameters.

Under the current interim status "indicator evaluation" monitoring program, the unit is not adversely affecting groundwater regarding the four indicator parameters: pH, conductivity, TOX and TOC. The interim status monitoring program has identified an area equivalent to the extent of 100-D effluent recharge as being cleaner than the surrounding chrome/tritium plume. Because of the low level of risk identified by hte current program, groundwater is not scheduled to undergo extensive Appendix IX sampling to select parameters for monitoring and possible decontamination verification.

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28. Chapter 5.0. The removal and decontamination to be achieved during closure of this unit must be demonstrated for ground water. The goal at closure is to leave no materials at the unit which require further care. By virtue of this unit being utilized for disposal, it is implied that wastes and/or residues will be remaining at the site. The goal at closure is to assure that these remaining wastes and/or residues are managed in a manner that protects human health and the environment. Therefore, it is important to demonstrate that ground water has not been adversely impacted by this unit. If it is found that this unit has adversely impacted the ground water (i.e., the closure performance standards of WAC 173-303-610 cannot be achieved), clean closure is not an option. The closure plan does not address this determination of options.

**WHC Response:** This unit was constructed and operated to accept the nondangerous effluent from the 183-D WTF. The demineralizer regenerative effluents containing corrosive (or previously neutralized corrosive) D002 waste for which the unit was RCRA permitted, represented only a tiny fraction of the total waste volume managed at the unit. This dangerous waste is not expected to remain; consequently, the reviewer's contention that dangerous wastes and/or residues must still exist at the site does not acknowledge the conditions under which this and many units at Hanford were RCRA permitted.

It is true that 40 CFR 260.10 definitions regarding disposal facilities assume that there will be waste remaining in place at the unit at the time of closure. It is also true that the TPA describes this TSD unit as a disposal unit (D-1-1). However, the Part A permit application differentiates this unit's processes as both disposal (D084) and treatment (T04). The permit application recognizes the disposal process as applying to the nondangerous 183-D WTF liquid effluent and the treatment process as applying to the corrosive D002 dangerous waste. These corrosives were expected to have been neutralized by: the successive discharges of acids and bases, the vast quantities (millions of gallons) of neutral pond water, and the calcareous constituents of soils lining the ponds (4.1.2.1).

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Further, pond water testing has indicated normal pH at the ponds and the 100-D Ponds Groundwater Impact Assessment (WHC-EP-0666) indicates that TSD unit constituents are not adversely affecting groundwater. They are, however, contributing to a slightly elevated pH (8.5-9.0) at the point of compliance attributable to reactions caused by clean pond water flushing through the ash/backfill.

Regarding an option for unit closure where TSD unit-managed constituents actually do adversely affect groundwater, the closure plan would not expect clean-closure certification of the TSD unit until groundwater contamination is remediated. Also, regardless of the source of groundwater contamination, no groundwater contamination will be undetected or unremediated. And as required by the Tri-Party Agreement, any such remediation by the operable unit must meet RCRA standards by adherence to all RCRA technical requirements. Please see also the response to NOD Comment 5.

29. 5-1/17. Page xiii, lines 8-9, of the Part A Forms section indicates that the Part A, Form 3, addressing the 100-D Ponds, was originally submitted in August 1986. Provide a chronological history of the well monitoring program and explain why the monitoring program was not begun until 1991. Please include any applicable compliance schedules addressing the monitoring program.

**WHC Response:** Milestone M-24-14 of the Tri-Party Agreement stated that 4 groundwater monitoring wells would be installed at the 100-D Ponds by December 31, 1991. The wells were completed before this date, meeting the milestone, and sampling subsequently was initiated. This information will be added to the revised Closure Plan.

30. 5-1/21. It is stated that the statistical comparisons of the indicator monitoring program "will be made." Upon revision of this plan, update the indicator monitoring program data and include the statistical comparison results. In addition, please provide an example of a statistical comparison which identifies which statistical method was utilized.

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**WHC Response:** A description of statistical methods will be added to section 5.2.1. Updated indicator parameter data and the statistical comparisons are provided in the RCRA Quarterly and Annual reports, which are submitted to the Regulators.

31. 5-1/22. The text correctly identifies that this phase of monitoring is commonly called "indicator evaluation" but incorrectly equates it to what is commonly referred to as "detection" monitoring. The referenced "detection" monitoring program is a similar program of 40 CFR 264.98. For the purposes of this closure plan, it is inappropriate to equate the two monitoring programs without showing that final facility standards of 40 CFR 264 or WAC 173-303 are met. Delete the phrase "or 'detection' monitoring."

**WHC Response:** The term "detection" is incorrect and will be replaced with "indicator evaluation."

32. 5-1/40-41, 5-2/44-52, 5-3/1-4 and Figure 5-1. The referenced items describe a ground water monitoring network comprised of the required one upgradient and three downgradient wells. The referenced item also propose to use the data generated from two wells for statistical comparison evaluations. In addition, Figure 5-1 shows well D8-5 installed approximately 500 feet away from the point of compliance. In addition, considering the ground water data and structural information of Figures 5-16, 5-17, 5-20 and Figures 4-10, 4-11 and 4-12 of "Groundwater Impact Assessment Report for the 100-D Ponds" (WHC-EP-0666), it is reasonable to conclude that ground water flow paths range from a northwesterly to a northeasterly direction. Therefore, the justification for the placement of well D8-5 is required. The justification may be presented in accordance with 40 CFR 265.90(c) or 265.91(a)(3). If the justification is not available or cannot be accepted, an additional well will be required to be installed at the point of compliance and to be utilized for statistical comparison purposes to fulfill 40 CFR 265 Subpart F requirements.

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**WHC Response:** The location of Well D8-5 and the decision not to use data from that well in statistical comparison, were chosen based on discussions between U.S. Department of Energy (DOE), Westinghouse Hanford Company, and U.S. Department of Ecology (Ecology) (Ms. K. Kowalik and Mr. T. Michelena). The decision was documented in a telephone conference memorandum and in a letter from DOE and WHC to Mr. T. Nord of Ecology. That letter is appended to an Engineering Change Notice of the 100-D Ponds groundwater monitoring plan, which has been transmitted to the reviewer. An additional well will not be installed until this conflict within Ecology is resolved.

33. 5-2/25-27 and Appendix 5A. Please provide an explanation for the selection of 20-feet screen lengths.

**WHC Response:** Tri-Party Agreement Milestone M-24-00 specifies that groundwater monitoring wells will be "...screened over no more than 15 feet of the aquifer unless otherwise approved by Ecology..." During well construction, approximately 15 feet of screen is placed below the water table and 5 feet above, to intersect any "floating" constituents and to allow for water table fluctuations.

34. 5-2/32-34. The referenced plan is required to be included within the closure plan and will be reviewed for approval when made available.

**WHC Response:** The groundwater monitoring plan was submitted to Ecology in 1991. Another copy of the plan was recently provided to the reviewer. It is currently referenced in the closure plan and will remain in the plan by reference only.

35. 5-2/35. The referenced item indicates that the laboratory analytical methods are "adapted" from "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods." Explain the referenced adaption. In addition, the method numbers identified in Appendix 5B are not familiar to the reviewer. Please equate the numbers of Appendix 5B to those of SW-846 test methods, if possible. It should be noted that any modifications to the required methods of WAC 173-303-110 should be submitted to Ecology in accordance with WAC 173-303-110 prior to their use.

| No. | Comments/Response | Concurrence |
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**WHC Response:** The text will be changed to state that analytical methods are the same as SW-846, except for constituents that are not listed in SW-846. A reference table will be provided with the revised Appendix 5B to show what method codes correspond to what analytical methods.

36. 5-2/36-38. A description of procedures for ground water sample collection and "field chemical" measurements is required to be included within the closure and will be reviewed for approval when made available.

**WHC Response:** General summaries of the procedures for sample collection and field measurements will be added to the text. References are provided for the complete procedures, which are in controlled manuals (e.g. *Environmental Investigation Instructions*, WHC-CM-7-7). Ecology has access to these procedures. It is neither practical nor desirable to include the procedures in the Closure Plan itself.

37. 5-2/44-45. Depending upon the resolution of the placement of well D8-5, the monitoring frequency may be subject to change.

**WHC Response:** Please see the response to NOD Comment 32.

38. 5-2/46, 5-5/15-19 and Table 5-2. From the analytes identified on Table 5-2, it appears that additional analytes are currently being monitored than are required for the 40 CFR 265.92 program. If the additional analytes are being monitored to satisfy WAC 173-303-645 program requirements, please describe the program as such. In addition, Appendix IX constituents will be required for closure decontamination verification purposes for other medias and are also appropriate for ground water. The program should include a mechanism for Appendix IX sampling for parameter selection and decontamination verification. In addition, the Appendix IX sampling results of other applicable medias related to the unit should also be utilized for parameter selection.

| No. | Comments/Response | Concurrence |
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**WHC Response:** The additional constituents are not intended to address WAC 173-303-645, which is for final-status facilities. Regarding the requirement for Appendix IX constituents analysis for TSD unit medias, please see the responses to NOD Comments 3 and 16, stating that decontamination verification parameter selection will be limited to those constituents with historical and process knowledge that indicating a potential to have been managed at the site. Regarding limiting parameter selection sampling, please see the responses to NOD Comment 27. Regarding ensuring that groundwater and TSD unit parameters are consistent, please see the response to NOD Comment 28 identifying steps for TSD unit and operable unit communication/notification regarding monitoring parameters.

39. Table 5-2. After parameter selection for ground water decontamination verification monitoring, the parameters of Table 5-2 (total organic carbon, total organic halogen, coliform bacteria, phenols, etc.) should be evaluated. If certain parameters are to be monitored in lieu of others, the substitutions should be specified as well as an explanation of how the parameters are to be utilized (i.e., statistical comparisons or levels).

**WHC Response:** The response to NOD Comment 38 indicates that the groundwater monitoring program is not attempting to exactly duplicate WAC 173-303-645 groundwater monitoring requirements and is not scheduled to perform extensive sampling to further identify groundwater monitoring or decontamination verification parameters.

40. 5-3/6-9. Please provide a copy of document # WHC-CM-7-7.

**WHC Response:** An uncontrolled copy of the manual will be provided as requested.

41. 5-3/29-33. Please provide a copy of document # WHC-SD-EN-DP-043.

**WHC Response:** A copy of the document will be provided as requested.

| No. | Comments/Response | Concurrence |
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42. 5-3/29-33. The data for calcium carbonate content is difficult to read from the prepared well logs of Appendix 5A. Please provide sample analyses data. Also, the calcium carbonate data was noted to vary widely. Please provide an interpretation of the data.

**WHC Response:** Calcium carbonate data are included in WHC-SD-EN-DP-043, which will be provided to the reviewer. These data will be discussed in more detail in the revised closure plan.

43. 5-3/35-38. Please provide a copy of the geophysical logging interpretation, if available.

**WHC Response:** Some interpretation of the geophysical logs will be provided in the revised closure plan.

44. 5-3/40-45. The wells were described to have been developed using different methods. Please provide an explanation. In addition, please provide turbidity results measured to date.

**WHC Response:** An explanation for the different methods of development pumping will be provided in the revised Closure Plan. Turbidity data are included in Appendix 5B. More recent data are available in the quarterly reports and in the HEIS database, which are available to Ecology.

45. 5-4/1-2. Please provide a copy of document # WHC-SD-EN-DP-043.

**WHC Response:** Please see the response to Comment 41.

46. 5-4/18-21. The clarification of which monitoring program will be implemented at which time is required. For purposes of closure, a ground water monitoring program of 40 CFR 265, Subpart F is required. For purposes of an equivalency determination and as provided by the Tri-Party Agreement, a groundwater monitoring program of WAC 173-303-645 is required.

| No. | Comments/Response | Concurrence |
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**WHC Response:** The current groundwater monitoring program complies with 40 CFR 265, Subpart F. Please see the response to NOD Comment 27 regarding the need for an equivalency determination and for a final status groundwater monitoring program under WAC 173-303-645.

47. 5-4/21-22. A description of procedures for ground water sampling protocols and analytical methods is required to be included within the closure plan and will be reviewed for approval when made available.

**WHC Response:** See response to comment 36.

48. 5-4/47. Change the wording from "detection level" to "indicator evaluation."

**WHC Response:** Text will be revised as suggested.

49. 5-4/49. As stated above, 40 CFR 265.91 requires three downgradient wells unless 40 CFR 265.90(c) or 265.91(a)(3) is(are) demonstrated. Modify this, if necessary, when the issue is resolved.

**WHC Response:** Please see the response to NOD Comment 32.

50. 5-5/1-5. If WAC 173-303-645 standards are to be achieved through this closure document, describe the standards and identify the detection and compliance monitoring program.

**WHC Response:** Please see the response to NOD Comment 27 regarding adding parameters to supplement the minimal interim-status groundwater monitoring program requirements of 40 CFR Subpart F. Such supplementing would be done to meet the technical requirements of WAC 173-303-645 without assuming closure of the unit as a final-status unit.

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51. 5-5/10-11. The referenced item indicates that samples have been collected since late 1991, but Appendix 5B does not appear to indicate any sample collection dates in 1991. Please clarify the discrepancy.

**WHC Response:** The text will be corrected; samples were first collected in 1992.

52. 5-6/7-11. The referenced item is noted with interest. At this time, it is assumed that the initial year of background data collection has been completed as well as an additional semi-annual sampling event. As the pH measurements are stated to be measured in the field, please provide the data with the NOD response. In addition, please explain why this parameter is measured in the field.

**WHC Response:** Recent pH data are available in the RCRA groundwater quarterly reports and the HEIS database. Measuring pH in the field is standard protocol and is recommended by the *Technical Enforcement Guidance Document* (EPA, 1986).

53. 5-6/13-17. Please explain why this parameter is measured in the field.

**WHC Response:** Measuring specific conductance in the field is standard protocol and is recommended by the *Technical Enforcement Guidance Document* (EPA, 1986).

54. 5-6/19-34. Describe the status of the audit and data evaluation investigation. Also, identify the available ground water monitoring options in the event the data cannot be utilized.

**WHC Response:** The following information will be added to the text: Updates on audits and data evaluations are provided in the RCRA groundwater quarterly and annual reports. Since there is no record of organic constituents being discharged to the 100-D Ponds, the potential loss of the TOX data should have little impact on monitoring results.

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55. 5-7/3-4. Delete or qualify the statement. Currently, the statement is not qualified in any fashion (i.e., there is no description of filtering equipment/methods, no reference to studies conducted under similar conditions which make this conclusion, etc.).

**WHC Response:** Closure plan text will be revised to state that, although some very fine particles may pass through the filters (<0.45 microns), it is reasonable to assume that most of the metals in filtered samples are dissolved.

56. 5-7/11-13, Table 5-2 and Appendix 5B. Constituents appearing on Table 5-2 are not reflected in Appendix 5B to have been analyzed. For example, Table 5-2 indicates that antimony, beryllium, cadmium, cobalt, copper, tin, vanadium, etc. are to be analyzed, but, Appendix 5B does not indicate that they were. If Appendix 5B does not include the data due to the detection concentrations occurring below CRQLs, please indicate this in the text.

**WHC Response:** Please refer to Table 5B-1 in conjunction with Table 5B-2. All the constituents analyzed are listed in Table 5B-1. Only detected constituents are listed in 5B-2. This information is present in the text of the appendix (APP 5B-i).

57. 5-7/42. Delete or qualify the statement.

**WHC Response:** Because chromium was detected in most of the unfiltered samples and not in the filtered samples, it is reasonable to assume that virtually all the chromium is particulate. Closure plan text will be revised to incorporate this reasoning.

58. 5-8/4-5. Delete or qualify the statement.

**WHC Response:** Since iron was detected in most of the unfiltered samples and not in the filtered samples, it is reasonable to assume that virtually all of the iron is particulate. Closure plan text will be revised to incorporate this reasoning.

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59. Figure 5-4. A 100D - 100DR areas and well map generated on August 9, 1993, by an Ecology Geographic Information Systems (GIS) Specialist indicates that additional wells exist. For example, additional wells D3-1, D2-3, D2-2, D2-1, D5-1, D-2, D5-22, D-1A, D5-25, D5-24, D5-23, D5-6, etc. are identified. Please update Figure 5-4 and include all wells.

**WHC Response:** To the best of our knowledge, all the existing wells are shown on Figure 5-4, except Well D8-2, which is dry. Many of the wells listed by the reviewer no longer exist; the casings were removed and no data are available. Listed numbers D5-22 through D5-25 are vadose zone borings, not wells.

60. 5-10/43-44. Please identify which document, wells, or data the statement is referencing.

**WHC Response:** Statement will be clarified.

61. 5-10/33. The referenced interpretive "plume" of ground water may also be due to the structure and an associated contaminant dilution factor, as can be interpreted from figures 5-16, 5-17 and 5-20. Either include the additional interpretation or delete the allusion to the artificial recharge from the 100-D ponds being less contaminated than surrounding ground water. When data exists to better substantiate or confirm either (or both) interpretation(s), it is appropriate to include such information.

**WHC Response:** The top of the Ringold Formation and the top of the Ringold mud unit are relatively flat in the vicinity of the D-Ponds. Artificial recharge from the D-Ponds is the most plausible explanation for the plume of relatively cleaner water. The statement is a qualified one ("Data... may indicate...") and is appropriate as written.

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62. 5-21/35. Considering the ground water data and structural information of Figures 5-16, 5-17, 5-20 and Figures 4-10, 4-11, and 4-12 of "Groundwater Impact Assessment Report for the 100-D Ponds" (WHC-EP-0666), it is reasonable to conclude that ground water flow paths range from a northwesterly to a northeasterly direction. Modify the text accordingly.

**WHC Response:** Text will be revised to include a more detailed description of groundwater flow (also see the response to Comment 64).

63. Figure 5-20. Please include the river level elevation for July 1992.

**WHC Response:** There is no river stage recorder in the 100-D Area. River stage is not known.

64. Additional Figures. From the water level measurements of Appendix 5C, it appears that additional water table contourings can be made. Due to the varying ground water flow directions in the vicinity of the 100-D Ponds, and the unit's proximity to the river, additional contourings are requested. At a minimum, contourings for July, August, September, and October 1992 are requested to be generated. During generation of the contourings, please include river level elevations.

**WHC Response:** Maps will be provided to show the water table when it is high, low, and average. The latter will be constructed of average data for a year. As stated in the response to Comment 63, river stage is not recorded in the 100-D Area.

65. 6-1/12-14. Delete the referenced statement. It is inappropriate to defer post-closure monitoring requirements related to a RCRA unit to another program. If "clean closure" cannot be achieved, a post-closure plan and a RCRA Part B permit application will be required to be submitted pursuant to WAC 173-303-610(7), 610 (8) and WAC 173-303-650(6) and should be stated as such in the closure plan.

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**WHC Response:** Regarding the appropriateness of deferring groundwater remediation to the 100-HR-3 operable unit, please see the response to NOD Comment 5.

66. 6-1/14-16. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

**WHC Response:** Please see the response to NOD Comment 2.

67. 6-1/18-20. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

**WHC Response:** Please see the response to NOD Comment 2.

68. Figure 6-1. Revise the figure to reflect the requirements of WAC 173-303. For example, the sampling and analysis/data evaluation action should reflect a characterization action. Also, the "expedited response" term is neither defined within the closure plan, nor within WAC 173-303 and therefore should be deleted. Similarly, although the term "protective closure" is defined by the closure plan, it is not defined within WAC 173-303. Therefore, delete the ovals and the term. Delete all references to RCRA past practice actions within the figure to reflect only those actions relating to the closure of this RCRA unit. Also, delete the term "health-based levels." This term may be substituted, where appropriate, with Model Toxics Control Act (MTCA) cleanup levels, if applicable.

**WHC Response:** Figure 6-1 is a closure strategy flowchart that identifies the first step in unit closure as sampling and analysis/data evaluation. The specifics for this flowchart are identified in Section 6.0 for aspects of closure plan strategy and Section 7.0 for sampling specifics. The figure will be revised to identify this first round of sampling as being for purposes of site characterization and for closure verification where no RCRA constituents are found above clean-up levels.

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This figure will be revised to incorporate new Ecology guidance allowing closure of the unit with contaminants remaining above background thresholds or limit of quantitation (LOQ) but below health-based cleanup levels. The figure will use Ecology terms "clean closure" for closure to MTCA Method B residential health-based levels and "modified closure" for closure to MTCA Method C industrial standards. The revised figure will eliminate the term "protective closure."

Regarding deletion of all reference to past-practice actions in Figure 6-1, please see the response to NOD Comment 4. Further, the figure accurately reflects the Hanford strategy, guided by the Tri-Party Agreement, for coordinating RCRA and past-practice unit activities wherever possible. This is particularly true where the Tri-Party Agreement specifically assigns the TSD unit to the operable unit, as it does in assigning the 100-D Ponds TSD unit to the 100-DR-1 operable unit.

The term "health-based levels" is used to reflect cleanup levels that may be above background or LOQ but still protect human health. Such cleanup levels may be arrived at using MTCA or HSBRAM equations, which are essentially analogous. The development of HSBRAM and its similarity with MTCA is based on the Tri-Party Agreement mandate to ensure consistency of physical remediation actions of all site units (RCRA and past practice) by using the same cleanup levels. Consequently, the sole use of "MTCA cleanup levels" instead of "health-based levels" is limiting and not necessarily reflective of the source of an agreed-on final cleanup level, particularly where physical RCRA unit closure activities are performed according to the operable unit record of decision (ROD).

Regarding the use of the term "expedited response", Section 7.2.4 of the Tri-Party Agreement states: " If data or information acquired at any time indicate that an expedited response is needed or appropriate...." It is a general term in the Tri-Party Agreement that bounds either a CERCLA removal action or a RCRA interim measure, and is therefore defined via the Tri-Party Agreement. The term will be added to the closure plan glossary.

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69. Footnote on Figure 6-1. The draft permit for the treatment, storage, and disposal of dangerous waste for the Hanford facility may contain a condition(s) addressing the utilization of Hanford Sitewide background data. If the permit is effective prior to the approval of this closure plan, and if the condition allows for the usage of this particular data, the footnote is acceptable. Otherwise, delete or modify the definition of "background."

**WHC Response:** The draft of the Hanford Facility permit contains no limitations regarding the use of Hanford Sitewide background data.

70. 6-2/26. Delete the acronyms "RFI/CMS." Within the RCRA program the "RFI" acronym represents "RCRA Facility Investigation" for which there is a specific usage and definition associated. The definition of RFI is available upon request. Similarly, the "CMS" acronym represents "Corrective Measure Study" for which there is a specific usage and definition associated. The definition of CMS is available upon request. The referenced usage is currently incorrect.

**WHC Response:** Section 7.4 of the Tri-Party Agreement describes the RCRA Facility Investigation/ Corrective Measure Study (RFI/CMS) process as established for Hanford. The RFI and CMS processes were integrated into one process for Hanford to be more equivalent with the CERCLA Remedial Investigation/Feasibility Study (RI/FS) process. Therefore the definition for the integrated RFI/CMS process should be governed by the description in Section 7.4 of the Tri-Party Agreement. It is noted that the acronym description in the front of the closure plan is incorrectly shown as Remedial Field Investigation/Corrective Measure Study, and will be changed to RCRA Facility Investigation/Corrective Measure Study to be consistent with the Tri-Party Agreement. Also, the use of "RCRA RFI/CMS" will be deleted throughout the closure plan as being redundant.

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As indicated in the response to NOD Comment 4, TSD unit and past practice unit activities will be coordinated whenever possible and so the RFI/CMS acronym cannot reasonably be deleted. When the operable unit is a RCRA past practice unit, as is the 100-DR-1 operable unit, the acronym "RFI/CMS" is appropriate to describe the operable unit characterization process. This process information will be used by the TSD unit in support of RCRA TSD unit closure wherever possible. The deferral of any RCRA activity to the operable unit does not imply that TSD unit closure will occur before operable-unit completion of TSD remediation activities to RCRA standards.

71. 6-1/29. Although the term "action levels" is defined within the closure plan as "concentrations of analytes of interest that prompt an action . . .", the term is not defined by WAC 173-303. As the closure plan addresses a RCRA unit, and to avoid confusion on this subject, delete the "action level" phrase. It should be noted that a definition for "cleanup level" is provided by WAC 173-340-200 which may be utilized by reference of proposed WAC 173-303-610 (scheduled to be promulgated in December 1993 to amend WAC 173-303-610 to include WAC 173-340-200).

**WHC Response:** The term "action level" as defined in the closure plan and the term "cleanup level" as defined in the referenced WAC, are not synonymous. Background, LOQ, and MTCA/HSERAM health-based cleanup levels, are a subset of all "action levels." The response to an action level ranges from further evaluation to physical removal/remediation. Deleting the term "action level" would be unnecessarily limiting and would not necessarily reflect the level of activity mandated by the contaminant concentration. Where cleanup is being considered in the closure plan as the required action, the term "cleanup levels" will be used as suggested.

72. 6-1/29. The ambiguous term of "contaminants of concern" is not appropriately defined for the function of this document. Delete the statement. A term such as "waste constituents" may be considered for substitution.

**WHC Response:** Text will be revised by substituting the term, "contaminants of concern", with "waste constituents", as suggested.

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73. 6-1/28-31. It is proposed to evaluate characterization sampling results to "determine the absence or presence of contaminants." It is indicated in the Part A application that the unit was utilized for disposal. It is also indicated in Chapter 4 that estimates of "contaminants" have been made to identify "waste inventory." If decontamination by removal has not occurred, for purposes of the closure of this unit, it will be assumed that disposal has occurred. Therefore, revise the statement qualifying that sample analysis results will be evaluated to determine the absence or presence of contaminants within the pond characterization samples. It should be noted that prior to closure, the pond water (if present), sediments, sludges (if present), soils, leachate (if applicable), and ground water must be evaluated to determine if "removal or decontamination" has occurred.

**WHC Response:** Regarding the waste inventory, the only dangerous waste documented in the Part A, Form 3, is the demineralizer recharge effluent that may have been corrosive-characteristic dangerous wastes as it was discharged to the process sewer system and subsequently to the 100-D Ponds. Physical "removal" of soils has not occurred; however, removal of the corrosive characteristic through neutralizing has occurred, followed by disposal of the neutralized effluent to the soil column. Please see also the response to NOD Comment 28. All other wastes (mercury and shop chemicals from drains, etc.) discussed within the closure plan were presented as only having a potential to have been discharged to the sewer system feeding the ponds, and then at such small quantities as to be undetectable at the ponds when/if spilled (Section 3.4, Lines 45-49). Where sampling indicates that these contaminants do not exist at the unit above regulatory levels requiring physical removal or decontamination, such removal or decontamination obviously need not occur. Where the closure plan is not clear in identifying the presence of any constituent other than corrosives as being potential only, the closure plan will be clarified.

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74. 6-1/31-33. Delete the sentence. Closure standards for RCRA units are found in WAC 173-303-610. This cite quite clearly requires removal or decontamination.

**WHC Response:** Please see the response to NOD Comment 71 explaining the use of "action levels." Further, please see the response to NOD Comment 73 regarding "removal" by neutralization.

75. 6-1/35-36. Delete or modify the sentence. If modifying the text, include and cite background or MTCA as the closure performance standard, if applicable.

**WHC Response:** Please see the response to NOD Comment 71.

76. 6-1/36-42. Delete or modify the referenced item. If the description is to be modified, include and cite background or MTCA as the closure performance standard, if applicable. References to "health-based" levels must be corrected and specified as background or MTCA levels, if applicable.

**WHC Response:** Regarding the use of the term "health-based" levels, please see the response to NOD Comment 68.

77. 6-1/44-46. Delete the sentence as the cited methodology has not been approved for usage at RCRA units for purposes of closure.

**WHC Response:** Regarding the use of HSBRAM, please see the response to NOD Comment 68. Further, MTCA could be referenced at this sentence as an equivalency to HSBRAM.

78. 6-1/46-52 and 6-2/1-3. Modify this description referencing MTCA, if MTCA standards are to be utilized, if applicable. Correct the descriptions of variables, as appropriate. Also, specify that the MTCA database is updated periodically, and that the cleanup levels will be based on values that are current at the time of approval of this closure plan, if applicable.

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**WHC Response:** As indicated in the response to NOD comment 77, MTCA will be referenced in the previous sentence. The description of the "variables" oral referenced dose for noncarcinogens and cancer slope factor for carcinogens [in lieu of cancer potency factor (CPF)] is consistent with the IRIS Database as the cited source of information for HSBRAM equations. The MTCA Database (CLARC II) was not used as a reference during preparation of this closure plan. However, if it is used in future revisions to the plan, information regarding its updating, will be added to closure plan text.

79. 6-2/28-30. The proposed strategy as described in Section 6.1 of the closure plan could be interpreted as an action of abandonment rather than one of decontamination or removal. As previously stated, during closure of the unit, it must be shown that all applicable medias and equipment/accessories associated with the unit have been removed or decontaminated to the standards of WAC 173-303-610(2). Delete the sentence.

**WHC Response:** Referenced text will be revised to state: "Clean closure of the unit would eliminate the need for postclosure care and further maintenance. However, if TSD unit media are contaminated above accepted regulatory levels thereby requiring removal or remediation prior to certification of closure of the unit as a surface impoundment, the unit closure will be in compliance with WAC 173-303-610 (2) and WAC 173-303-650 (6). Where such removal or remediation activities in support of TSD unit closure are performed by or in conjunction with the 100-DR-1 operable unit, such closure activities will remain in compliance with WAC requirements. If the unit must close under the contingency closure plan as a landfill per WAC 173-303-610 (3), closure of the unit will be in compliance with WAC 173-303-650 (6) and postclosure monitoring will be in compliance with WAC 173-303-610 (7)."

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80. 6-2/30-33. The sentence, as written, would indicate that clean closure had not been achieved if contaminated soils or water, exceeding the standards of WAC 173-303-610(2), are left in place. Also, as stated earlier, the usage of the "RFI/CMS" acronym is incorrect. Also, as stated earlier, it is inappropriate to defer post-closure requirements to another program. Delete the sentence and replace it with a statement how compliance with WAC 173-303-610(7) and 173-303-650(6) will be achieved.

**WHC Response:** Please see the response to NOD Comment 79.

81. 6-2/45-48. Delete the bullet and replace it with a statement that, where applicable, all applicable contaminated medias and equipment/accessories associated with the unit will be removed or decontaminated to the standards of WAC 173-303-610(2).

**WHC Response:** Section 6.2.2 bullets will be revised. The first bullet will be revised to add the following text: "Further sampling of unit media (soil, water, and equipment) will be performed to further determine the existence and/or extent of contamination at the site." The second bullet will be revised to add the following text: "Unit media contaminated above applicable regulatory cleanup standards will be removed or decontaminated to standards of WAC 173-303-610 (2)."

82. 6-3/6-10. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

**WHC Response:** Regarding ceasing discharges to the 100-D Ponds before June 1995, please see the response to NOD Comment 2.

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83. 6.3/First Bullet. Include a statement that, where applicable, all applicable contaminated medias and equipment/accessories associated with the unit will be sampled to determine if decontamination has occurred, or if removal is necessary. As discussed under the comment on Section 7.3.8, a typical function conducted during the closure of a surface impoundment is to identify the maximum extent of contamination prior to the implementation of an approved closure plan. It should be noted that the referenced previous soil and water sampling, as described in Chapter 7.0, will be insufficient to achieve the extent of contamination determination and the decontamination verification.

**WHC Response:** Closure plan text, Page 6-3, Line 17, will be revised as follows: "Collect samples from applicable 100-D Ponds TSD unit media and from surrounding soils." Further, Section 6.3 will be revised to include appropriate references to planned Phase II sampling. Regarding the need for further soil sampling, please see the response to NOD Comment 3.

84. 6-3/24-26. Specify that samples will be analyzed in accordance with WAC 173-303-110.

**WHC Response:** Referenced text will be revised to state that "Phase II samples will be analyzed in accordance with the requirements of WAC 173-303-110."

85. 6-3/30-31. Change the term "action level" to that of "cleanup levels" or "background," whichever approach is to be utilized.

**WHC Response:** Regarding the acceptability of use of the term "action level", please see the response to NOD Comment 71.

86. 6-3/31. Change the term "contaminants of concern" to "waste constituents."

**WHC Response:** The referenced text will be revised as suggested.

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87. 6-3/32-33. Change the wording "further remediation" to "decontamination or removal."

**WHC Response:** The referenced text will be revised as suggested.

88. 6-3/38-45. Define what is meant by "imminently hazardous to human health or the environment." Also, identify which regulatory agency would be notified for guidance.

**WHC Response:** This portion of the text will be deleted as being not applicable to the 100-D Ponds TSD unit as indicated by initial (Phase I) pond soil and sediment sampling results.

89. 6-3/48-49. Change the term "action level" to that of "cleanup level" or "background," whichever approach is to be utilized.

**WHC Response:** The term "cleanup level" will be used in place of "action levels" in the referenced text.

90. 6-3/47-49. Add to the statement that, where applicable, all applicable contaminated medias and equipment/accessories associated with the unit will be removed or decontaminated to the standards of WAC 173-303-610(2).

**WHC Response:** This information will be added to the bullets following the referenced bullet. The referenced bullet addresses clean closure based on sampling results indicating contamination below cleanup levels, a case which does not require waste removal or unit decontamination.

91. 6-3/49-50. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

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**WHC Response:** Regarding discontinuing discharges to the 100-D Ponds, please see the response to NOD Comment 2.

92. 6-3/51-52. Add to the sentence a qualifier that groundwater monitoring initiated specifically due to the 100-D Ponds will continue until such time after closure activities are completed as is necessary to verify that the ground water has not been contaminated or that the decontamination or the removal of waste constituents from ground water has occurred.

**WHC Response:** The referenced bullet explains the option of clean closure without remedial activity beyond sampling. The referenced sentence will be revised as follows: "When it has been demonstrated that groundwater quality has not been adversely affected by 100-D Ponds operations, RCRA groundwater monitoring may cease."

A more appropriate location for the requested information regarding continuation of monitoring upon the completion of removal or decontamination activities, would be the first bullet on Page 6-4. The following sentence will be added at that bullet: "RCRA groundwater monitoring will continue until after physical closure activities are completed and until it is demonstrated that groundwater has not been contaminated by TSD unit closure activities. Where decontamination or the removal of past-practice waste constituents from groundwater has not occurred, groundwater monitoring will continue under the past-practice groundwater monitoring program."

93. 6-4/1. Change the term "action levels" to that of "cleanup levels" or "background," whichever approach is to be utilized.

**WHC Response:** The term "cleanup level" will be used in place of "action levels" in the referenced portion of the text.

94. 6-4/5-6. Describe in detail how it would be determined that the contamination is from 100-D Ponds only. If the determination is not definitive, delete the sentence.

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**WHC Response:** Please see the response to NOD Comment 16.

95. 6-4/7-9. Identify which WAC 173-303 regulation would allow certification of closure with wastes/waste constituents remaining above WAC 173-303-610(2) standards. If one cannot be identified, delete the sentence. In addition, during a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

**WHC Response:** The referenced sentence and the following sentence, which ends at Line 12, will be deleted.

96. 6-4/18-21 and 6-4/27-30. Describe in detail how it would be determined that the contamination is from "RCRA past practice activities in addition to 100-D Ponds TSD unit activities." Due to the lack of documentation of materials directed to the sewer system, 40 CFR 264 Appendix IX constituents will be required to be evaluated for closure. The referenced demonstration may be attempted, but, it should be noted that it is due to the lack of documentation that justifies Appendix IX decontamination verification and an acceptance of such a demonstration would require the documentation that is reported not to exist. It should also be noted that if soils are contaminated with the waste constituents, of Appendix IX, it is appropriate to pursue decontamination or removal of those constituents through the RCRA closure process. If contaminants are identified through the closure process of which cannot be proven to have been directed to or placed within the surface impoundment, it is appropriate to notify the CERCLA program that the contaminants have been identified.

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**WHC Response:** Regarding the requirement for full Appendix IX sampling at the 100-D Ponds, please see the response to NOD Comment 16.

Where further RCRA unit sampling identifies past practice waste constituents, the 100-DR-1 RCRA Past Practice Operable Unit (OU) will be notified. The closure plan will be revised to include such notification. However, because the Tri-Party Agreement integrally binds TSD unit closure and the 100-DR-1 OU remediation, where waste removal or decontamination is required, such activities will likely be performed by the operable unit.

97. 6-4/21-25. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

**WHC Response:** Based on the response to NOD Comment 2, the sentence will be deleted.

98. 6-4/33. Change the word "soil" to "media and/or equipment/accessories."

**WHC Response:** Closure plan text will be revised as suggested.

99. 6-4/34-35. Delete "coordinated with the 100-DR-1 Operable Unit RFI/CMS process" and insert "conducted in accordance with WAC 173-303-610 and 173-303-650."

**WHC Response:** Regarding the acceptability of coordinating operable unit and TSD unit activities, please see the response to NOD Comment 4. As indicated in that comment response, coordination of RCRA unit and operable unit activities does not preclude conducting closures "in accordance with WAC 173-303-610 and 173-303-650." Consequently, the referenced sentence will be revised to include compliance to the referenced citations.

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100. 6-4/37-38. Cite WAC 173-303-610(6) stating that certification will be accomplished in accordance to the referenced item. In addition, include a provision that the independent professional engineer will be registered in the State of Washington.

**WHC Response:** Text will be revised to include a reference to WAC 173-303-610(6) and will reflect that the independent professional engineer will be registered in Washington State.

101. 6-4/44-45. In reference to a November 3, 1992, letter signed by Paul Day of the U.S. Environmental Protection Agency (EPA), it is the reviewer's understanding that EPA may elect to participate during the development of the closure plan. If this is the case, it is recommended that EPA be afforded every opportunity to participate prior to Washington State Ecology's approval of the closure plan.

**WHC Response:** The EPA has received copies of the closure plan. The EPA is currently invited to and apprised of the outcome of Unit Manager Meeting (UMM) discussions, decisions and agreements regarding the closure plan. The NOD Response Table will be submitted to the EPA at the same time it is submitted to Ecology. In these ways the EPA has been afforded the same opportunity to participate in closure plan preparation that Ecology has been afforded.

102. 7-1/5-8. It is stated that ". . . this chapter provides specific field sampling and laboratory analytical procedures that will be applied in identifying soil contamination (if any) originating from the operation of the 100-D Ponds TSD unit." In addition to an evaluation of soil contamination, an evaluation of all other medias and equipment/accessories present and related to the unit is required. The evaluation is required to determine what associated with the unit must be decontaminated or removed. Re-state the sentence to include provisions to evaluate all other applicable medias and equipment/accessories associated with the unit. In addition, the re-statement should include ground water as a media to be evaluated.

No. | Comments/Response | Concurrence

**WHC Response:** The referenced text will be revised to include the requested verbiage regarding the evaluation of other applicable media, e.g. "equipment/accessories." Further, a statement will be added that RCRA groundwater monitoring under an interim-status groundwater monitoring program is underway to evaluate the impact of the TSD unit on groundwater quality and that such monitoring will continue until unit closure.

103. 7-1/8-11. It is inappropriate to defer associated corrective action monitoring requirements related to the post-closure of this unit to activities to ground water activities to be completed for another unit and another program. The Tri-Party Agreement provides for a simultaneous investigation of ground water contamination for RCRA TSD units and CERCLA operable units. The reviewer interprets this provision (Volume 1, page 3-3) to address ground water contamination and ultimately corrective action(s) associated with the units. Furthermore, the reviewer does not interpret this provision to allow the deferral of post-closure requirements to another program. Delete the sentence.

**WHC Response:** The text will be revised to indicate that coordination of groundwater monitoring between the RCRA unit and the past practice unit will be conditioned on the TSD being the source of groundwater contamination. RCRA groundwater monitoring will continue until TSD groundwater contaminants are remediated. It should be noted here that as it now stands there are no contaminants from TSD unit operations affecting groundwater quality. If it is determined that there are TSD unit managed contaminants adversely affecting groundwater, certification of clean closure of the TSD unit may be withheld until such contaminants are remediated. Please refer to the response to NOD Comment 5 indicating that the TSD unit will not perform groundwater remediation.

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104. 7-1/11-14. When validated, the analytical results will be used as characterization information. The results cannot be accepted at this time to be used for confirmation of clean closure. A preliminary review of analytical parameters of Table A-1 of Appendix A indicates that not all 40 CFR 264 Appendix IX constituents were sampled for. In addition, all medias and equipment/accessories present, and related to, the unit are required to be removed or decontaminated in accordance with WAC 173-303-610. Delete the sentence or modify accordingly to indicate that the validated data will be used for unit characterization.

**WHC Response:** Please see the response to NOD Comment 3 regarding the need for further sampling. Please see the response to NOD Comment 16 regarding not needing full Appendix IX sampling. Please see the response to NOD Comment 3 regarding comprehensive characterization sampling performing as closure verification sampling where sample results indicate contamination levels that do not trigger cleanup.

The referenced sentence remains accurate given the proposed Phase II sampling and the revision of Figure 6-1 as indicated in the response to NOD Comment 68.

105. 7-1/17-20. For purposes of unit characterization, the pond soil and water sampling activities will be utilized within the closure plan. The pond soil and water sampling activities and results do not fulfill the requirements of WAC 173-303-610 and cannot be utilized by themselves to satisfy as confirmation of clean closure. The closure strategy of Chapter 6.0 clearly indicates a lack of understanding of the requirements of WAC 173-303-610 and cannot be interpreted to fulfill RCRA closure requirements. The sentence should reflect that the sampling activities and resulting generated data were completed for unit characterization purposes.

**WHC Response:** The referenced text is factually correct regarding the sampling plan having been written to reflect the already completed operable unit sampling. This chapter of the closure plan will be revised to reflect sampling in support of closure beyond the operable unit sampling mentioned in the referenced text. Regarding the need for further sampling, please see the response to NOD Comment 3.

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Regarding the acceptability of comprehensive characterization sampling performing as closure verification sampling where sample results do not trigger cleanup, please see the response to NOD Comment 3.

106. 7-1/29-31. The sentence should indicate that the corrosive wastes may have contained dangerous waste constituents. In addition, a sentence should be added which indicates that other dangerous wastes and/or dangerous waste constituents may have been directed to the ponds via piping connected to buildings 190-DA, 189-D, 185-D, 183-D, 182-D, 190-D and 1724-DA.

**WHC Response:** Operation's analysis of demineralizer regeneration effluent prior to its discharge to the process sewer system did not report (or reasonably expect) that the effluent contained any dangerous waste constituents other than the corrosives used in the demineralizer regeneration process. However, a qualified statement will be added indicating that these discharges to the process sewer system could have contained other dangerous waste constituents but at levels that are expected to have been so small as to not be detectable in the ponds.

107. 7-1/29. The sentence should read ". . . the 100-D Ponds received corrosive or previously neutralized corrosive wastes . . . ." Delete the word "potentially."

**WHC Response:** The referenced sentence will be revised as suggested.

108. 7-1/32-34. Due to the piping connection to seven buildings and the lack of records, the statement that the ponds have received no corrosive or dangerous waste constituents since 1986 cannot be substantiated. Delete the sentence.

**WHC Response:** The referenced text discusses demineralizer recharge effluent discharges. The last demineralizer regenerative discharge was in 1986 (3.4.1). The 189D MDL complex (the "seven buildings") was deactivated in 1988 (3.4). The deactivation of adjacent facilities as effluent contributors to the process sewer system by 1988 can readily be substantiated. Please see the response to NOD Comment 16, which elaborates on the use of process knowledge to support unit closure.

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109. 7-1/34-36. During a Unit Manager's meeting on July 1, 1993, it was explained that a decision had recently been made to discontinue usage of the 100-D Ponds. If this understanding is correct, delete or modify the referenced sentence accordingly.

**WHC Response:** The sentence will be deleted in accordance with the response to NOD Comment 2.

110. 7-1/38-40. The statement does not accurately reflect the disposal process for which the unit was utilized. Although no recorded documentation may exist that dangerous waste constituents were deposited directly into the ponds, there is evidence that dangerous waste constituents were directed and discharged to the ponds. An evaluation of the chemical reaction of the hydrochloric acid, sulfuric acid, and sodium hydroxide utilized to regenerate the three demineralizers, would reflect the generation of constituent-laden acids/bases. A further evaluation of the chemical reaction of the neutralization of such constituent-laden acids/bases would reflect the generation of constituent-laden precipitates.

**WHC Response:** This sentence was inserted into the closure plan to emphasize that process sewer effluent was the only waste form managed by the TSD unit. It is not an attempt to disprove the contention that corrosive dangerous waste or previously neutralized corrosive wastes were received by the ponds. However, the statement will be clarified to indicate that no direct dumping of any other waste form (e.g., buried drums, contaminated equipment) occurred at the unit.

111. 7-1/40. The sentence should read ". . . the corrosive or previously neutralized corrosive wastes . . . . " Delete the word potentially.

**WHC Response:** The referenced sentence will be revised as suggested.

112. 7-1/45. Delete or define the term "in minute quantities."

**WHC Response:** The phrase "in minute quantities," will be substituted for in this sentence with the verbiage, "at detectable levels."

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113. 7-1/48-50. The purpose of the closure plan is to demonstrate and document closure by removal or decontamination. Therefore, the closure plan must demonstrate and document that all medias and equipment/accessories present and related to the unit have been removed or decontaminated. Delete the sentence.

**WHC Response:** Sentence will be deleted as being superfluous.

114. 7-2/1-3. Without identifying which contaminants are of concern, the statement is meaningless. In addition, without identifying the "dangerous levels" of those dangerous waste constituents, the statement is meaningless. Delete the sentence.

**WHC Response:** The sentence will be revised to indicate that the analytes for Phase I of sampling were the analytes of concern to the operable unit as identified through the RFI/CMS process. The contaminants of direct concern to the TSD unit, i.e., those wastes managed at the unit, are identified through process knowledge in Chapter 4.0, Table 4-2, Waste Inventory as the corrosive wastes. Both pH (for corrosives) and mercury (indicated as a possibility) are parameters of the RCRA interim status groundwater monitoring program. Mercury is not being detected in groundwater at levels above drinking water standards of 2 ppb. The corrosives are not adversely affecting groundwater by way of dangerously elevated pH levels. Based on Phase I sampling results, Phase II sampling results and/or other information or agreements, this list may grow to include other constituents, e.g. neutralization products requiring further investigation. However, contaminants of concern and action levels will be considered during the DQO process for Phase II 100-D Ponds sampling.

It is apparent that the closure plan and Table 4-2 are not clear in identifying mercury more as a potential pre-RCRA site contaminant than as a TSD unit contaminant, i.e., as a contaminant that entered the process sewer system and was potentially discharged to the site prior to site usage as a TSD unit. Table 4-2 and the closure plan will be clarified to reflect the chronology of mercury deposition to the pre-RCRA site.

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115. 7-2/5-8. Delete the paragraph. Insert a paragraph stating that if sampling results of all medias and equipment/accessories present, and related to the unit, are contaminated, removal or decontamination will occur to those performance standards of WAC 173-303-610.

**WHC Response:** The paragraph will be revised to indicate that ensuring and documenting cleanup of the RCRA TSD-managed waste constituents will be the responsibility of RCRA, although such cleanup may be performed by the operable unit. Regarding the remediation of non-TSD unit constituents being the responsibility of the past practice unit, please see the response to NOD Comment 4.

116. 7-3/12-15. The surface phase of soil sampling is described as occurring from the surface to three feet deep. Lines 33 and 34 describe extracting the sample material from the "top one foot of hardpack." Figure 7-2 contours the settling pond sediment depth of which it appears that at least two samples (numbers 5 and 6) may have been collected from "hardpack" occurring deeper than three feet. Clarify the discrepancies.

**WHC Response:** The referenced sentence will be deleted as being superfluous.

117. 7-2/13-20. The section should include a description of the precipitation of dangerous waste constituents associated with the neutralized corrosive wastes. In addition, there should be a description of the unit's connection to seven buildings and the potential discharge of dangerous waste or constituents to the unit. In addition, the section should include a description of sludge, sediment, soil, ash, etc. associated with the ponds. In addition, the section should include a description of effluent, ash, sludge, etc. associated or remaining within the unit's piping.

**WHC Response:** A description of any precipitation constituents associated with the neutralized corrosive wastes will be added. They are not necessarily dangerous waste.

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This section of the closure plan is intended to address the requirements of WAC 173-303-610 (3)(a)(v), describing dangerous waste stored at the site and how it would be removed. This would include removal of dangerous waste residues in pond soils and removal of contaminated TSD unit transfer piping and equipment. This section of the closure plan will be expanded to address the above information.

The concrete outfall structure and all process sewer piping, including pond influent piping, preceded the TSD unit. Discharges into the process sewer system (including pond influent piping) of any contaminants (e.g., mercury) except the corrosive dangerous waste for which the unit was RCRA permitted also preceded the RCRA TSD. Consequently, the process sewer piping and pond influent piping, and the dangerous waste contaminants in both are past practice. These locations and equipment were reasonably omitted from Ecology-approved TSD unit sampling performed by the operable unit as being outside the boundary of the TSD unit.

118. 7-3/34. The term "hardpack" is used to describe the location of sediment sampling without defining the term. Define the term. In addition, if the term is describing a "layer," the continuity of the layer should be described.

**WHC Response:** The term "hardpack" will be defined. The layer is "backfill" which is consistent with site geomorphology and is identified in Figure 5-18.

119. 7-3/25-27. From the contouring of the settling pond sediment of Figure 7-2, it appears that the influent sampling location (location number 7 of Figure 7-1) is one of the two most shallow sediment depths. It does not appear (from Figure 7-1) that a sample was collected from near sediment depth measurement number 4. Considering the possible effluent discharge rates, under high flow rates of discharge, the deposition of influent most heavily contaminated with insoluble or quickly precipitated constituents may not have occurred at nonrandom sample location number 7. Identify if this concern was evaluated.

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**WHC Response:** This consideration will be evaluated via the formal DQO process during the selection of Phase II sample locations.

120. 7-3/24-25. Identify/describe how the influent point of the northern pond (percolation pond) was selected for sample number 7.

**WHC Response:** This point was selected because of the extent of slope of the pond wall and because that location is the first area at which the effluent could have pooled. This reasoning will be incorporated into closure plan text.

121. 7-3/28-29. Provide a description of how the random sample locations were selected. It appears from Figure 7-1 that if the settling pond were divided into four quadrants, the southeastern quadrant was not sampled.

**WHC Response:** The sampling of all quadrants was not a factor in selecting sample locations. Sampling of the southeastern quadrant of the settling pond will be considered during the DQO process for Phase II 100-D Ponds sampling.

122. Figure 7-1. It appears that no samples were taken of the mounded material in the western end of the northern pond (percolation pond). This material must be identified and evaluated during closure of the unit.

**WHC Response:** Site inspection indicates that the mounded soils do not visibly distinguish themselves from the surrounding unit soils. Sampling of the mounded material in the western end of the northern pond (percolation pond) will be considered during the DQO process for Phase II 100-D Ponds sampling.

123. Figure 7-1. It appears that no sediment or sludge samples were taken from the northern pond (settling pond), but rather, that samples were collected directly from the "hardpack." Please provide the rationale for this sampling approach.

| No. | Comments/Response | Concurrence |
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**WHC Response:** [Note: It is assumed that the reviewer's question pertains to the settling pond, which is actually the south pond] The samples taken at the surface of the hardpack were primarily of the sediment (alum flocculent) but were also expected to contain some of the hardpack.

124. 7-3/41-42. The sentence should read "[A]ppendix A, Table A-4 provides the list of analytes sampled." For closure of this unit, decontamination confirmation will be required for 40 CFR 264 Appendix IX constituents.

**WHC Response:** The sentence will be revised to identify Phase II sampling analytes. Regarding the lack of justification for full Appendix IX constituent sampling, please see the response to NOD Comment 16.

125. 7-3/42-44. Delete the sentence. Due to the lack of records and the piping connection to at least seven buildings, it is appropriate for decontamination confirmation to include 40 CFR 264 Appendix IX constituents.

**WHC Response:** Regarding the lack of justification for full Appendix IX constituent sampling, please see the response to NOD Comment 16.

126. 7-3/44-47. Delete the sentence. For closure of this unit, decontamination confirmation will be required for 40 CFR 264 Appendix IX constituents.

**WHC Response:** Please see the response to NOD Comment 16.

127. 7-4/45. The sentence indicates that soil and sediment samples were collected in both ponds. The description of Section 7.3.4 indicates the collection of "firm subsurface soil" after the sampling device was pushed through the sediment. As it is unknown if sludges exist at the bottom of the settling pond, the distinction between sediment and soil is important. Clarify the sentence.

| No. | Comments/Response | Concurrence |
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**WHC Response:** Sediment samples were not taken in the north (dry) pond. The sentence will be clarified to indicate that the sediment in the south pond and the soil of the north pond were sampled during Phase I sampling. Under the very broad definition of sludge provided in WAC 173-303-40, sludge will exist in the settling pond. However, this sludge is anticipated to be more characteristic of a possibly compacted, fine silt, than of the congealed deposit normally pictured by the use of the word sludge.

128. 7-4/47-48. Does the sentence mean that RCRA SW-846 analytical methods were utilized to analyze 16 of the samples collected, or, does the sentence mean that a sample collection method identified in RCRA SW-846 was utilized?

**WHC Response:** The sentence will be clarified to indicate that SW-846 methods were used to analyze the samples. The sampling collection methods are as prescribed in WHC EIIs, although the EIIs are actually based on SW-846 sampling methodology. This sampling methodology and sample location were approved by regulators via regulator approval of the description of work (DOW) for the sampling activity.

129. 7-5/1-6. From the description of selecting sample sites in section 7.3.2, it appears that the paragraph is describing the sample collection procedures of the percolation pond. Specify which samples or pond the paragraph is describing.

**WHC Response:** The sentence ending at line 2 will be revised to add the words "and soil" after the word sediment.

130. 7-5/17. Change the portion of sentence from "analytes of interest specific to 100-D Ponds TSD unit operations and its appropriate analytical method" to "analytes sampled for and their appropriate analytical method."

**WHC Response:** Text will be revised as suggested.

| No. | Comments/Response | Concurrence |
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131. 7-5/18-20. As decontamination confirmation for all medias and equipment/accessories present and related to the unit will include 40 CFR 264 Appendix IX constituents, delete the sentence.

**WHC Response:** This sentence will be deleted because validated sampling results are now available. However, regarding the lack of justification for full Appendix IX constituent sampling, please see the response to NOD Comment 16.

132. Section 7.3.8. This section needs to be rewritten and relocated to occur after the decontamination and verification sections of this closure plan. Typically, the approach followed within a closure plan for a RCRA unit is to describe in detail: 1) the unit (including descriptions of all medias and equipment/accessories present and related to the unit), 2) procedures to be performed to identify the maximum extent of contamination, 3) procedures to be performed to achieve decontamination or removal, 4) decontamination verification sampling procedures, 5) analysis of the data generated during decontamination verification sampling, 6) evaluation of need for further decontamination or removal procedures, etc.

**WHC Response:** The location within the closure plan of this (data analysis) section is consistent with Hanford closure plan format. Although not identical with the reviewer's "typical" closure plan format, the section is logically sequenced within this closure plan. Section 7.3.8 will, however, be rewritten as appropriate to reflect revised data analysis and evaluation procedures and activities as will be identified in the DQO process for Phase II sampling.

As indicated in the response to NOD Comment 3, closure planning for RCRA units at Hanford allows comprehensive characterized sampling to serve as closure verification sampling in proving that the unit is free of RCRA contamination above regulatory cleanup levels. This approach allows going from Step 2 to Steps 5 (data analysis) and 6 (comparison to regulatory cleanup levels) of the above typical closure plan sequence, thereby eliminating unnecessary steps. However, Phase I sample omissions do demonstrate the need for further characterization sampling which will be incorporated into the closure plan.

| No. | Comments/Response | Concurrence |
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133. 7-5/26 and 35. Assuming Section 7.3.8 is to be rewritten, the sentence should identify if a statistical and/or comparative (MTCA) evaluation will be performed. The inclusion of a detailed description of procedures for the evaluations is required by WAC 173-303-610(3).

**WHC Response:** The closure plan text will be revised to specify that for Phase I and Phase II sampling results, a MTCA/HSBRAM comparative evaluation of concentrations at the site will be performed. The text will also indicate that for Phase II sampling a statistical analysis will also be performed. A description of the steps for both analyses will be included in the closure plan. Regulator agreements for Phase I sampling and the formal DQO process for Phase II sampling will determine the procedures for these evaluations.

134. 7-5/28. Assuming the section is to be rewritten, the sentence would more appropriately read ". . . further decontamination or removal and further decontamination verification sampling . . . ."

**WHC Response:** This sentence regarding data usage will be deleted as inappropriate to this portion of the closure plan dealing with data analysis.

135. 7-5/31-33. As decontamination confirmation for all medias and equipment/accessories present and related to the unit will include 40 CFR 264 Appendix IX constituents, delete the sentence.

**WHC Response:** Regarding performing Appendix IX sampling for further 100-D Ponds characterization, please see the response to NOD Comment 16.

136. 7-5/40. Pond sediment is not the only media associated with this unit. Modify to include all medias and equipment/accessories present and related to the unit.

**WHC Response:** Closure plan text will be revised to reflect sampling of all TSD unit media agreed to during the DQO process for Phase II of sampling.

| No. | Comments/Response | Concurrence |
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137. 7-5/44-45. Delete the sentence. No mechanism exists for testing the significance of a location which indicates contamination.

**WHC Response:** Reference to evaluating depth effects will be deleted.

138. 7-5/47-49. During a July 27, 1993, site visit, the ash/gravel contacts noted across and through the ponds appeared to occur at the top of the ponds and to be dipping in a westerly direction. From visual inspection, it appears that the basins were excavated through the ash into underlying soil/gravel. If noted correctly, it is inappropriate to compare pond sampling results with ash pile sampling results, except in the case that the upper portion of the walls of the unit where the ash occurs is sampled. Considering comment under 4-3/1-7, if the ash/soil/gravel/etc. contacts associated with the unit cannot be established, it may be inappropriate to make the described comparisons. Modify the approach accordingly.

**WHC Response:** Please see the response to NOD Comment 14 regarding the possible location of ash contacts as identified by Figure 5-18 (based on well logs). If the reviewer's visual inspection findings regarding the slope of ash contacts can be corroborated during future WHC/RL inspections, the plan will incorporate the findings. However, even if contacts were actually above the pond bottoms, particularly in the settling pond, leaching, runoff, and sluffoff from the pond walls would still contribute ash constituents to pond effluent.

WHC and RL contend that they do not have the latitude to ignore the ash as the primary background medium solely because ash/soil contacts cannot be pinpointed. Even if the ash/soil contacts remain indeterminate, ash must be considered as the primary medium in establishing local background because of its pervasiveness at the site, i.e., the unit having been excavated out of an ash disposal basin.

| No. | Comments/Response | Concurrence |
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139. 7-5/47-52 and 7-6/1-4. Assuming Section 7.3.8 is to be rewritten, the approach should identify if a statistical or a comparative (MTCA) evaluation will be performed. A detailed description of the procedures to be followed for the approach(es) selected should be included. Guidance regarding these approaches is provided in the Washington State Department of Ecology's "Guidance for Clean Closure of Dangerous Waste Facilities" (Draft) dated April 1993.

**WHC Response:** Regarding the method of data evaluation, please see the response to NOD Comment 133.

140. Section 7.3.8. In the rewritten Section 7.3.8, please include a provision to submit to the Ecology Unit Manager, copies of all analytical results with associated quality assurance/quality control information generated during closure sampling activities, including radiation surveys.

**WHC Response:** Ecology normally requests and receives (e.g., 2727-S NRDWS Facility, 216-B-3 Pond) a copy of all validated laboratory summary data sheets and the accompanying laboratory narrative, and, a copy of the data validation report. A provision will be added to the closure plan text requiring submittal of a data package to the Ecology Unit Manager that includes this information. Quality assurance/quality control information is normally needed only for purposes of data validation, which is performed by the contractor before data submittal to Ecology.

Ecology will receive all field radiation survey results performed for purposes of job safety from logbook(s) generated during field activities. A total activity analysis is performed for all samples at the 222-S Laboratory prior to their being shipped offsite. This analysis is performed to satisfy DOE orders and DOT regulations for shipment. The results of this analysis are normally furnished to the sample shipper only and ultimately to the HEIS (Hanford Environmental Information System) database. Such an analysis does not meet all laboratory protocols, is not validated, and is not used in making closure decisions. Consequently, furnishing the results of this analysis to Ecology is not appropriate.

| No. | Comments/Response | Concurrence |
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However, Ecology will receive all results of laboratory analysis for radiological constituents where such analysis is performed.

141. 7-6/11-13. It should be noted that the referenced analysis report will not suffice for certification of closure. It should also be noted that a period of ground water monitoring will be required after the completion of decontamination or removal activities associated with everything other than ground water. Upon completion of the ground water monitoring period, and if the ground water is not contaminated, certification of closure is appropriate.

**WHC Response:** The text will be revised to indicate that the referenced report will include information regarding future sampling results and will also include an evaluation of data results compared to regulatory cleanup levels. Regarding the nature of the data evaluation report, please see the response to NOD Comment 133.

However, this comment assumes that decontamination or removal, and therefore attendant post-remediation groundwater monitoring, will take place when no determination regarding the likelihood or extent of remediation has been made. Please see the response to NOD Comment 73 indicating that decontamination and removal by the RCRA unit are unnecessary if characterization sampling indicates contamination concentrations below cleanup levels or the response to NOD Comment 4, if contaminants are considered to be past-practice constituents.

142. 7-6/13-14. The sentence implies that a risk assessment will be developed to analyze the hazards associated with the unit. Neither existing WAC 173-303-610, nor proposed WAC 173-303-610, provide a mechanism for performing a risk assessment as part of closure. Delete the sentence.

**WHC Response:** The sentence will be deleted. The 100-DR-1 will not be performing a qualitative risk analysis (QRA) for the 100-D Ponds due to the innocuousness of the unit.

| No. | Comments/Response | Concurrence |
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143. 7-6/17. Delete the word "residue." Contamination may be substituted.

**WHC Response:** The text will be revised as suggested.

144. 7-6/19. Cite WAC 173-303-610(3)(v).

**WHC Response:** The text will be revised as suggested.

145. 7-6/29-31. Due to the lack of records, the piping connection to at least seven buildings, a characterization that did not address all medias and equipment/accessories present and related to the unit, and the non-existence of sampling data to substantiate the statement, delete the statement.

**WHC Response:** This statement will be deleted.

146. 7-6/35-37. Due to the lack of records, the piping connection to at least seven buildings, a characterization that did not address all medias and equipment/accessories present and related to the unit and the non-existence of sampling data to substantiate the statement, delete the statement.

**WHC Response:** This stated expectation of low contamination levels at the site has been corroborated by the results of the initial (Phase I) sampling. However, because further sampling will be performed and because such a conclusion is unnecessary at this juncture of the closure plan, the statement will be deleted.

147. 7-6/37-40. Delete the reference to WAC 173-340. The usage of WAC 173-340, if applicable, can be achieved through WAC 173-303-610.

**WHC Response:** The text will be revised as suggested when the proposed changes to WAC 173-303-610 are promulgated.

148. 7-6/39. If the sentence is to remain in the closure plan, add ground water as a media.

| No. | Comments/Response | Concurrence |
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**WHC Response:** Text will be revised as suggested to include groundwater as a medium that may contain hazardous constituents at below hazardous levels.

149. 7-6/40-45. Delete the two sentences and insert a reference to the closure performance standards of WAC 173-303-610(2) indicating that all applicable contaminated medias and equipment/accessories associated with the unit will be removed or decontaminated.

**WHC Response:** Text will be revised to include the suggested reference and to include any specific decontamination actions deemed necessary based on the results of sampling performed to date and based on Phase II sampling results.

150. 7-6/51-52 and 7-7/1-4. As recited in Section 7.4, the closure plan must include "[A] detailed description of the steps needed to remove or decontaminate . . . equipment, structures, . . . ." The decontamination or removal of the associated piping must be addressed in the closure plan, prior to the approval of the plan as the piping is considered part of the unit. In addition, during an August 11, 1993, Unit Manager's meeting, it was explained that all discharges to the unit may be ceased by March 1994. If this understanding is correct, delete or modify the referenced sentences.

**WHC Response:** As indicated within Section 7.5 of the closure plan, none of the piping that is either directly related to the TSD unit (e.g., settling pond standpipe and pond's transfer piping) or ancillary (e.g., process sewer influent piping) to the TSD unit, is expected to be contaminated with waste managed at the unit (demineralizer acids/bases). However, this piping was not sampled during TSD unit Phase I sampling. The sampling of TSD unit related piping will be addressed through the DQO process for Phase II sampling to complete TSD unit characterization. The results of Phase II sampling will be used to determine the extent of contamination above regulatory cleanup levels requiring 100-D Ponds media decontamination or removal.

| No. | Comments/Response | Concurrence |
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With the recent decision to cease discharges to the 100-D Ponds, the status of noncontaminated piping and structures can be addressed in the closure plan for purposes of future site restoration. The closure plan will be revised to include notification of the 100-DR-1 RCRA Past Practice Operable Unit [via the Hanford Waste Identification System (WIDS)] of noncontaminated piping/structures that will remain after RCRA closure.

Regarding continued discharges to the ponds after RCRA closure, please see response to NOD Comment 2.

151. 7-6/Additional Section. An additional section (7.3.10) should be included which will address the determination of extent/existence of contamination. The section should include all relevant elements of a plan to meet the objectives including a description of work, a description of medias to be sampled, a description of sampling methods, an identification of analytical methods, and laboratory analysis, etc.

**WHC Response:** Chapter 7.0 will be rewritten to address any future sampling and/or decontamination. There are already relevant and appropriate sections of Chapter 7.0 existing for the inclusion of the above-cited closure plan attributes.

152. Section 7.6. Delete the sentence. As stated above for Section 7.3.8, the section needs to be rewritten to include a description of: 1) decontamination verification sampling procedures, 2) analysis of the data generated during decontamination verification sampling, 3) evaluation of need for further decontamination or removal procedures, etc. In addition, a period of ground water monitoring will be required after the completion of removal or decontamination activities associated with everything other than ground water.

| No. | Comments/Response | Concurrence |
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**WHC Response:** This section of the closure plan is in the standard format for Hanford closure plans and is intended to reflect the requirements of WAC 173-303-610 (3) (a) (vi) for any unit-specific activities required to meet closure performance standards during the closure period, e.g., dewatering, site restoration and groundwater monitoring. These activities are limited to the scope of activities required to facilitate the 100-D Ponds clean closure strategy. Implementation of this strategy could require equipment removal/decontamination and verification sampling. Additional bullets which identify removal or decontamination of contaminated media (e.g., sludge, equipment, and/or applicable piping), decontamination verification steps (sampling) for all applicable media, removal of noncontaminated structures/equipment for purposes of site restoration, and, post-remediation groundwater monitoring, will be listed in this section as possible activities.

153. Section 7.6. In the rewritten section, please include that split or duplicate samples will be provided to Ecology upon request.

**WHC Response:** The closure plan will be revised to ensure that Ecology is informed of sampling activities sufficiently in advance to ensure that it has ample opportunity to collect split or duplicate samples.

154. 7-7/9. Delete the words "monitoring or." A period of ground water monitoring will be required.

**WHC Response:** The referenced verbiage will be deleted.

155. 7-7/10. The closure plan should include enough detail to allow for a description of activities to be performed. Delete the word "may."

| No. | Comments/Response | Concurrence |
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**WHC Response:** Because a Phase II of sampling for unit characterization is needed, the nature and extent of physical activities necessary to close the unit can still only be surmised. Once all sampling results (Phase I and II) are available, this section of the closure plan will be revised to include any activities in support of closure that are required during the closure period and that are not specified elsewhere in the closure plan.

156. 7-7/16 and 18. Descriptions of cap installation and maintenance are activities that are more appropriately described in the contingent closure plan within Section 7.7. Delete the bullets.

**WHC Response:** The referenced bullets will be deleted.

157. Section 7.6. Add an additional bullet which identifies removal or decontamination of wastes and/or sludges. Also, add an additional bullet to remove or decontaminate applicable piping. Also, add additional bullets to identify decontamination verification steps for all applicable medias.

**WHC Response:** The unit-specific activities required during the closure period to satisfy WAC 173-303-610 (3) (vi) and to implement unit closure strategy that are not addressed in other Chapter 7.0 sections of the closure plan, will be addressed in this section as indicated in the response to NOD comment 152.

158. 7-7/23. The correct WAC cite is WAC 173-303-650(6).

**WHC Response:** The citation will be corrected as indicated.

159. 7-7/33. During an August 11, 1993, Unit Manager's meeting, it was explained that all discharges to the unit may be ceased by March 1994. If this understanding is correct, delete the sentence.

**WHC Response:** Please see the response to NOD Comment 2.

| No. | Comments/Response | Concurrence |
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160. 7-7/35. Delete the wording "as rapidly as practicable" and insert an action or activity that will trigger the referenced stabilization activities.

**WHC Response:** The wording "as rapidly as practicable" will be deleted. A bullet will be inserted indicating that initiation of the contingency closure plan would occur if sample analysis indicates dangerous waste remaining at the unit that is above health-based cleanup levels and that the owner/operator determines will be left in place. Such a decision by the owner/operator would be made in coordination with 100-DR-1 activities regarding final disposition of the entire operable unit and which will be made with regulator involvement. The Postclosure Permit Application will specify cover monitoring and maintenance.

161. 7-7/41-42. Delete the phrase "following the 100-DR-1 operable unit RFI/CMS" and insert a description of what action or activity will trigger the referenced submittal of a final closure cover design.

**WHC Response:** Please see the response to NOD Comment 160 regarding the events that would trigger implementation of closure as a landfill and the appropriateness of operable unit involvement.

| No. | Comments/Response | Concurrence |
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162. 7-8/43-44. The proposal to utilize "soils native to the 100-D Ponds site and to the Hanford Site" for cover material is noted with interest. Also noted on page 4, lines 30-32, of the State Environmental Policy Act Environmental Checklist (included with closure plan), is a statement which identifies an intent for the majority of the fill material to come from the "berms located on the west, north, and east sides of the pond." To utilize the coal ash in this way, the material would first be required to be evaluated as suitable material. In addition, reusing the coal ash in this fashion may subject the use to the dangerous (hazardous) waste designation procedures of WAC 173-303-170(1). Under the Dangerous Waste Regulations, coal ash **"may"** designate for the solid corrosive characteristic (section -090(6)(a)(iii) or perhaps for a state criteria (sections -101 through -103). Evaluate this proposal. If the intent remains the same, include a description of steps to be taken to determine the suitability of the material. In addition, if applicable, include a description of steps to be taken to determine the suitability of any fill or cover material to be utilized.

**WHC Response:** The closure plan text, and the *State (of Washington) Environmental Policy Act* (SEPA) Checklist will be revised to indicate that clean fill material from other portions of the Hanford Site recognized as noncontaminated will be used as cover material.

163. Pages 7-8 - 7-15. Please identify what design criteria/source was utilized for the proposed cover. It should be noted that a recommended technical guidance document for cover designs is entitled "Final Covers on Hazardous Waste Landfills and Surface Impoundments" (NTIS PB89233480). Please confirm if the proposed is consistent with the recommended guidance.

**WHC Response:** The conceptual cover for the 100-D Ponds is designed to the criteria set forth in WAC-173-303-650 (6) (C) (I), which states that the surface impoundment should be covered with a final cover designed and constructed to: Provide long-term minimization of the migration of liquids through the closed impoundment with a material that has a permeability less than or equal to the permeability of the bottom liner system or natural subsoils present;..."

| No. | Comments/Response | Concurrence |
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As indicated within the closure plan, the hydrologic evaluation of landfill cover performance (HELP) was used for the development of a conceptual cover design for the 2101-M Pond. Because the same cover design was used for the 100-D Ponds, HELP modeling for the 2101-M Pond is also applicable to the 100-D Ponds. The cover design meets the spirit and intent of 530-SW-89-047, July 1989, as stated in its introduction. This and any other applicable EPA references used in the design of the cover will be added to 100-D Ponds closure plan text.

164. Pages 7-8 - 7-15. If decontamination or removal (clean closure) is not attained, a RCRA cover should be designed and constructed with best available technology at the time of construction. If a cover is required, a detailed cover design, including construction specifications, must be submitted to the Department of Ecology for approval prior to construction. Include a provision to submit the detailed construction specifications in the event that "clean closure" is not achieved.

**WHC Response:** The following information will be included in closure plan text: Clean closure of this TSD unit is fully expected. However, as required by the regulations for surface impoundments, Section 7.7 of the closure plan presents a contingency plan for closure of the unit with waste left in place above dangerous levels. The contingency plan is closure of the unit with a landfill cover. This section presents for approval an initial conceptual cover design as the basis for a final cover design. Should cover implementation become necessary, and before cover construction, functional design criteria and a definitive design based on this conceptual design will be arrived at. The final cover would be subject to Ecology approval. The final cover design (including as-built changes) would be submitted with the Postclosure Permit Application, if required.

165. 7-13/11-12. The statement that no wastes have been buried below the 100-D Ponds is not an accurate reflection of the usage of the ponds for disposal purposes. Either clarify the statement, or add another statement which reflects disposal.

| No. | Comments/Response | Concurrence |
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**WHC Response:** This and the following sentence will be revised to indicate that no buried, containerized waste exists at the site, but compression and consolidation of sediments will occur with dewatering.

166. 7-13/12-12. The closure plan does not address the possibility of the existence of wastes at the unit. In addition, due to the continued usage of the ponds, wastewater does exist. Therefore, consolidation and compression of wastes can occur by dewatering of wastes. Either clarify the statement, or add another statement which reflects that prior to closure, removal, or decontamination of existing wastes will occur. Also, clarify that in the event that closure in place is required, dewatering of the ponds will occur prior to the initiation of closure activities.

**WHC Response:** Please see the response to NOD Comment 165 regarding revision of this portion of the text, the response to NOD Comment 2 regarding discontinuing use of the ponds after RCRA closure, and the response to NOD Comment 3 indicating that the ponds will be dewatered by the time of closure.

167. Section 7.8. Modify as necessary to incorporate any additional necessary training courses to achieve the decontamination or removal requirements associated with closure.

**WHC Response:** The training matrix presented in Appendix 7B, Training Course Descriptions, fulfills the WAC 173-303-330 safety and site-access training requirements for work at a hazardous waste site, containing radiological and/or dangerous waste, regardless of the nature of the activities. Job qualifications, i.e., discipline training such as sampler, equipment operator, are not addressed within this closure plan.

168. 7-15/12. Due to the number of necessary changes to the closure plan, a definition of "actual closure activities" is requested. If closure-related work is to be done prior to the approval of the closure plan, a clear identification of which activities will be performed through this plan is requested.

| No. | Comments/Response | Concurrence |
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**WHC Response:** Further activities in support of closure, such as sampling or decontamination as agreed to with regulators, will be delineated in the work plans that must be submitted to the lead regulatory agency for review (Section 7.8) and will also be delineated in the appropriate sections of the revised closure plan.

169. 7-15/21. Either delete the RFI/CMS acronym or write out the words "Remedial Field Investigations/Corrective Measures Study."

**WHC Response:** The acronym RFI/CMS can be replaced by the term RCRA Past Practice Operable Unit.

170. Figure 7-3. The closure schedule should be re-drawn to reflect the modifications that will be made to the closure plan.

**WHC Response:** Figure 7-3 will be revised to reflect further activities in support of closure, such Phase II sampling, as agreed to with regulators.

171. Figure 7-3. Delete footnote number 1. The activities described in the closure plan do not meet the requirements of WAC 173-303, and cannot be approved as a "RCRA/TSD unit" integration.

**WHC Response:** The closure schedule will be revised to reflect new activities in support of RCRA unit closure, such as Phase II sampling and/or any decontamination or removal activities required to achieve specified cleanup levels, and the dates for the performance of the activities. However, as indicated in previous comment responses, any further activities required to close the RCRA TSD unit must continue to be integrated wherever possible with the activities of the 100-DR-1 Operable Unit. Consequently, for accuracy, the schedule for future TSD unit closure activities will reflect coordination with the operable unit schedule.

172. Figure 7-3. Delete footnote number 2. As integration has not been achieved, the completion deadlines associated with the operable unit are not necessary within this document.

| No. | Comments/Response | Concurrence |
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**WHC Response:** Please see the response to Comment 171 regarding continuing integration of RCRA and RCRA past practice activities for closure of the 100-D Ponds.

173. Figure 7-3. Modify the figure to reflect the schedule of activities only associated with the closure of 100-D Ponds. In addition, such activities should include conductance of a radiation survey, decontamination or removal to identified cleanup levels, decontamination verification sampling, analyze verification sampling, evaluate data, further decontamination or removal, decontamination verification sampling, etc.

**WHC Response:** Regarding redrawing the schedule to include new closure activities, please see the response to Comment 171.

174. Figure 7-5. Modify the dates and months to agree with the closure activities and dates that will be performed upon approval of the closure plan.

**WHC Response:** This schedule will be updated to coincide with revised TSD unit closure activities.

175. Section 7.11. Please include a provision to submit to the Ecology Unit Manager, a copy of any field logbooks generated in relation to closure of 100-D Ponds.

**WHC Response:** A copy of field logbook WHC-N-205 No. 15, for Phase I sampling, was submitted to Ecology as Appendix 7C of Revision 0 of the closure plan. The closure plan text will be revised to include a requirement that field logbooks will also be submitted to Ecology.

176. Chapter 7. The draft permit for the treatment, storage, and disposal of dangerous waste for the Hanford facility may contain conditions to address several items not addressed/included within the closure plan. Should the permit go into effect prior to the approval of the closure plan for this unit, the applicable conditions must be incorporated.

| No. | Comments/Response | Concurrence |
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**WHC Response:** Revised permit conditions impacting TSD unit closure activities will be incorporated into the closure plan where appropriate.

177. Chapter 7. Please include a provision that split or duplicate samples will be provided to Ecology upon request.

**WHC Response:** The closure plan will include verbiage that provides for ample notification to Ecology of sampling events so that Ecology can obtain split or duplicate samples.

178. Figure 7-4. If the draft permit for the treatment, storage, and disposal of dangerous waste for the Hanford facility is finalized, in effect, and contains a condition requiring the certification to be signed by applicable permittees, Figure 7-4 will be required to be modified.

**WHC Response:** Revised permit conditions regarding closure certification signature presently indicate that the closure certification will be only signed by the owner/operator, which is the U. S. Department of Energy, Richland Field Office.

179. 7-16/7.11. Please cite WAC 173-303-610(6) in this section.

**WHC Response:** WAC 173-303-610(6) will be cited in this section as requested.

180. 8-1/17. If the draft permit for the treatment, storage, and disposal of dangerous waste for the Hanford facility is finalized, in effect, and contains a condition requiring the certification to be signed by applicable permittees, Figure 7-4 will be required to be modified.

**WHC Response:** Regarding signatures required on the certification of closure, please see the response to NOD Comment 178.

| No. | Comments/Response | Concurrence |
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181. 8-1/16. In addition to the regulation cited, please include WAC 173-303-610(10).

**WHC Response:** WAC 173-303-610(10) will be cited as suggested.

182. 8-1/28. The correct cite is 40 CFR 265.119.

**WHC Response:** The text citation will be corrected as indicated.

183. 8-1/43. Change the cites from WAC 173-303-610(7)(d) and 40 CFR 264.117(c) to WAC 173-303-610(7) and 40 CFR 265.117, respectively.

**WHC Response:** The referenced closure plan text and the regulatory references that support it, WAC 173-303-610(7)(d) and 40 CFR 264.117(c), specifically address property use restrictions that are appropriate for inclusion in a deed. The more general references suggested in the comment also include postclosure care of the property, which is not a function of the deed.

184. 8-2/8. Delete the word residual.

**WHC Response:** The word residual will be deleted as suggested.

185. 8-2/10-12. As the unit is utilized for disposal purposes, it can be argued that contamination is expected. Delete the wording "although not expected."

**WHC Response:** The referenced text will be deleted as being unnecessary.

| No. | Comments/Response | Concurrence |
|---|---|---|

186. 8-2/13-15. Add a statement which reflects that, if applicable, post-closure care of the property will be conducted in accordance with WAC 173-303-610(7), 650(6) and 645. It should be noted that the RCRA requirements of WAC 173-303 must be satisfied and cannot appropriately be deferred to another program. As stated above under comment 1-2/17-19, the Tri-Party Agreement provides for a simultaneous investigation of groundwater contamination for RCRA TSD units and CERCLA operable units. The reviewer interprets this provision to address ground water contamination and ultimately corrective action(s) associated with the units. It is inappropriate to defer decontamination verification activities related to the RCRA TSD to another program. In addition, if corrective action is required (i.e., ground water monitoring indicates the disposal unit is the source of contamination), the corrective action requirements of WAC 173-303-645 will be imposed.

**WHC Response:** The text will be revised to indicate that post-closure care of the property will be conducted in accordance with WAC 173-303-610(7) and 650(6), and, will meet the technical requirements of WAC 173-303-645.

Regarding the appropriateness of the coordination of groundwater and source operable unit remediation, please see the responses to NOD Comments 5 and 4, respectively.

187. 8-2/15. Write out the words for the "RFI/CMS" acronym.

**WHC Response:** Please see the response to NOD Comment 70.

188. 8-2/24. Include that the data will also be used to comply with WAC 173-303-610, 650 and 645 requirements.

**WHC Response:** The text will be revised to include the referenced citations. However, adherence to WAC 173-303-645 requirements will be limited to adherence to the technical requirements of WAC 173-303-645, as indicated in the response to NOD Comment 4 and 186.

| No. | Comments/Response | Concurrence |
|---|---|---|

189. 8-2/42-45. Delete the sentence and specify that the postclosure inspection will continue until such time as is specified by WAC 173-303-610, 650 and 645.

**WHC Response:** The sentence will be deleted as an unnecessary restatement of the previous sentence.

190. 8-3/8.2.1.1. Please confirm if the described security controls have changed. Revise the description accordingly, if applicable.

**WHC Response:** The description will be revised regarding access from the Columbia River to read, "The banks of the Columbia River bordering the Hanford Site are posted 'No Trespassing'."

191. 8-4/21-30. Specify that the ground water monitoring will be conducted under an approved, postclosure ground water monitoring plan, if applicable. Delete the description of the current ground water monitoring program.

**WHC Response:** The closure plan text will be revised to include the following information: The groundwater monitoring program will be assessed at the time of closure and a revised monitoring plan will be prepared and submitted for approval if needed. If the current monitoring program meets the needs of post-closure monitoring, the current program will be continued.

192. 8-4/32-35. See comments under 5-1/12-15, 5-1/22 and Chapter 5.0. The ground water monitoring program which will be implemented should be described here.

| No. | Comments/Response | Concurrence |
|---|---|---|

**WHC Response:** The assessment monitoring program cannot be described at this time. Its form would depend on what constituent triggered assessment, its distribution, and concentration. It is not known at this point whether additional wells would be needed, what constituents to add to the analyte list, etc. Assessment programs are tailored to the results of the indicator evaluation program, and at 100-D Ponds, the indicator program has not yet shown an adverse impact on groundwater quality. The closure plan text will be revised to state that if an assessment plan is needed, it will be prepared and submitted to the regulators for approval.

193. 8-4/37-45. Cite WAC 173-303-645 and indicate that the ground water detection, compliance, and/or corrective action program(s) will be conducted in accordance with those requirements.

**WHC Response:** Please see the response to NOD comment 27 indicating that the interim status groundwater monitoring program can suffice for unit closure when the interim status program meets the technical requirements of the final status program.

194. 8-5/24. Does the term "maintenance action" address minor and major erosion damage? Please specify which type of erosion damage will be initiated within the 90 day time period.

**WHC Response:** "Maintenance action" is synonymous with "minor damage." The text will be revised to indicate that repairs of "minor damage" will be initiated within 90 days of the time of discovery.

195. 8-5/25-27. In the event that repairs cannot return the site surfaces to predamaged conditions, specify that the postclosure plan will be amended in accordance with WAC 173-303-610(8)(d).

**WHC Response:** The text will be revised to include verbiage indicating that where site damage has occurred that requires cover-design modifications, the postclosure plan will be amended in accordance with WAC 173-303-610(8)(d).

| No. | Comments/Response | Concurrence |
|---|---|---|

196. 8-5/8.2.3.3. In the event that field maintenance procedures are inadequate to correct ground water monitoring well problems, specify that the postclosure plan will be amended in accordance with WAC 173-303-610(8)(d).

**WHC Response:** The text will include verbiage indicating that, where monitoring well damage that requires modification of the groundwater monitoring program occurs, the postclosure plan will be amended in accordance with WAC 173-303-610(8)(d).

197. 8-8/47. The legend should read "Danger - Unauthorized Personnel Keep Out."

**WHC Response:** The closure plan text will be revised to include the indicated verbiage. Newly installed signs at the TSD unit now indicate the desired verbiage.

198. 8-8/40-43. What time frame is the statement referring to? If sitewide controlled access requirements change prior to closure is the building of a fence being proposed? The statement is unclear.

**WHC Response:** This section of the closure plan depicts care of the unit during a postclosure monitoring period. The referenced text will be revised to indicate that if Hanford security changes during an extended postclosure period, specifically if public access to the site is allowed, a fence will be installed around the unit having warning signs wired to it so as to be seen from any approach.

199. 8-9/8.4. Please cite WAC 173-303-610(8) in this section.

**WHC Response:** WAC 173-303-610(8) will be cited in this section as requested.

200. 8-9/29-36. Please cite WAC 173-303-610(9) in this paragraph.

**WHC Response:** WAC 173-303-610(9) will be cited in this section as requested.

| No. | Comments/Response | Concurrence |
|---|---|---|

201. 8-9/38-40. Please cite WAC 173-303-610(10) in this paragraph.

**WHC Response:** WAC 173-303-610(10) will be cited in this section as requested.

202. 8-9/8.6. Please cite WAC 173-303-610(11) in this section.

**WHC Response:** WAC 173-303-610(11) will be cited in this section as requested.

203. Table 8-1. Indicate that well condition will be inspected each time the well is sampled (i.e., at same frequency of well sampling).

**WHC Response:** As indicated in Section 8.2.2, both groundwater sampling and well condition will be inspected semi-annually. Because groundwater sampling and well inspection will be performed by the same individuals, Table 8-1 will be revised to indicate that well condition will be inspected when sampling is performed.

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